CLINICAL LANGUAGE REHABILITATION OF THE VETERAN METHODS AND RESULTS [1]

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In September 1948 an aphasia clinic was established in the Newark Veterans Administration Mental Hygiene Clinic, which had been organized in 1946. The Mental Hygiene Clinic functioned on a team basis with a psychiatrist, clinical psychologist, and psychiatric social worker comprising each team. Although the existing clinic setup aimed at treatment of the whole personality of the veteran and tried to include all his needs in regard to mental adjustment and rehabilitation, it was soon recognized that, in special cases, speech or voice therapy was a good means of completing the treatment and furthering professional or vocational training and the all-around efficiency of the veteran.

The speech therapist recruited the first patients from the various clinic teams; later patients were referred from other departments of the Regional Office, and at present certain medical clinics, the prosthetic appliance unit, the vocational guidance and special rehabilitation units all refer patients for speech retraining. All patients selected for speech treatment have had a preliminary thorough medical examination and in many cases are given supplementary treatments such as physiotherapy or psychotherapy.

Thirty per cent of the speech patients in the clinic had vocal defects of purely psychogenic origin. The program is limited to service-connected disabilities or to defects recognized to be an adjunct condition; but it is extended also to veterans in training under Public Law 16.

The clinic material can be grouped under the following headings:

I. Psychogenic speech impediments such as (a) traumatic stuttering and (b) cluttering.

II. Functional voice disorders such as (a) falsetto voice in men and (b) closing of the ventricular bands during voice production.

III. Lesions of the central nervous system such as (a) traumatic or inflammatory changes in the language centers of the cerebrum and (b) dysarthric disintegration of speech as a consequence of encephalitis.

IV. Rehabilitation problems of the hard of hearing such as (a) lip-reading program for veterans with service-connected defective hearing and (b) speech and voice deterioration of the hard of hearing and the deaf.

V. Defects of speech mechanism caused by injuries affecting the peripheral nervous system such as (a) facial paralysis and (b) hypoglossus paralysis.

VI. Illiteracy caused by (a) reading difficulties in childhood, (b) emotional mental blocking in childhood, and (c) inadequate educational facilities.

The above classification discloses a large variety of language, speech, and voice disorders and on the basis of this material a report of the clinic's working methods and results may be warranted.

STUTTERING

Numerically the greatest problem was the stutterers. Research on stuttering during the past 30 years has essentially proved that this is not a speech disorder caused by inefficient functioning of the peripheral speech apparatus, but is rather an anxiety neurosis. Whether the stuttering and the varied associated symptoms disclose predominantly a fear connected with the act of oral communication, or whether the speech defect is no more than a dramatic symptom of a deep-rooted anxiety neurosis caused by repressed subconscious psychotrauma during early childhood is still an unanswered question. The theory that stuttering is an anxiety neurosis is based on observations that the original element is apprehension concerning

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the complex function of speech and that all difficulties and frustrations are of a secondary nature stemming from the incapacity for normal oral communication. Louise Despert (1), in a clinical study on stuttering in children, found that the most conspicuous psychodynamic factor in the development of this speech disorder was a maternal neurotic attitude toward the child in the early speaking-eating situation.

A recent attractive hypothesis, not yet adequately supported by anatomical or physiological findings, explains stuttering as a disturbance in the neuro-physiological mechanism of speech by affective impulses coming from the thalamic region—the thalamus being *per se* the organ of affective experience(2).

E. Froeschels(3) observed that, in the initial stage of speech development, stuttering is so common among small children that he coined the term "physiological stuttering." This physiological stuttering consists solely of repetition of syllables or words that are built into a rhythmic pattern of a child's speech. Usually this condition disappears completely after a few weeks and is nothing more than a milestone in the acquisition of normal speech. But in some instances an inherited neurotic disposition or neurotic behavior in the child's environment or both factors combined may call the child's attention to his organs of articulation and he may imagine that he has to overcome some inadequacy in himself; consequently he believes that some effort is necessary to correct his speech impediment. Unfortunately, this very effort defeats its purpose and produces a block or tonus in his apparatus of articulation. The first tonic symptom is an indication that serious stuttering will result in time if not immediately checked by appropriate countermeasures. A variety of symptoms will be soon superimposed on the speech defect, all resulting from the child's primary effort to correct his stuttering.

The case histories of the stuttering patients in the Newark Veterans Administration Speech Clinic confirmed the findings of two former investigators, S. Blanton(4) and Kardiner(5), that the traumatic stuttering caused by the emotional stress of war is but a recurrence of the same speech difficulty in evidence in early childhood. When questioned, all the patients could finally recall that they had stuttered as small children, that it had disappeared at puberty only to become manifest with a violent symptomatology following some terrifying incident in the war. One of our patients began to stutter after having parachuted from his plane behind the German lines. When he was questioned by the German military authorities, he suddenly observed that he was stuttering as in childhood; another man started stuttering after his regiment had undergone an aerial bombardment in France; and a third, when he discovered that his buddy had been killed. These and similar stories that show the regression into the latent childhood speech impediment could be enumerated repeatedly.

It was interesting to note that the symptoms of stuttering varied with the educational background of the patients; the lower the educational level, the more primitive were the manifestations of stuttering. One patient, a boy of Italian extraction who had never gone beyond the fourth grade in school and could hardly read and write, repeated his words 4 or 5 times like a victrola record; tonus was observed only when he was asked to read and seemed to be caused by his inability to recognize printed words. Other men of similar background, as soon as questioned, demonstrated violent tapping of hand or foot and a third group were unable to speak at all for some minutes. The men with high school or college education had developed a more sophisticated evidence of their speech defect. We saw one patient who, while enunciating the occlusive consonants *b*, *p*, and *m*, distorted the left corner of his mouth, producing a tonus. The same patient reversed his sentences, abstained from using words that he assumed to be difficult to pronounce, and had worked out what seemed a very stilted mannerism of speech in order to maintain a certain fluency.

One patient puckered his lips and rocked his trunk back and forth 5 or 6 times before he was able to speak. Another introduced smacking sounds as embolophrasia between words and a third puffed out his cheeks every time a word began with *St* (his name was Stanley), thus producing a violent tonic stress. Regardless of the variety and com-

plexity of symptoms among the different individuals, 3 common denominators could be discerned in all of them: disturbance of the rhythmical production of language, marked incongruity between thoracic and abdominal breathing, and, finally, almost constant flaring of the nostrils.

The therapeutic measures applied depended on the results of the projective techniques employed to evaluate subconscious neurotic conflicts that might call for psychiatric treatment in addition to psychological speech therapy.

One case history, in which psychologic speech therapy alone obtained excellent results, will here be recorded.

The case was a 30-year-old veteran, S. P., a tall young man, right handed and of asthenic body structure. He was happily married, an engineer by profession and had been an officer in the Army. He observed the onset of his speech difficulty during extensive interrogation as a German war prisoner. He tells this story: "I just felt that I could not say anything because I was afraid I might tell something which would be of value to the enemy. I am now employed by the A. O. Company and have been offered an executive position in the field if I can get rid of my speech impediment. Every time I have to face new people I have the same reaction I had then." At the first 2 sessions, he could not remember having had a previous speech difficulty but on his third visit he confessed that he believed he had heard his mother say that his speech was not too good as a youngster. He is not sure in what manner it was not good.

The symptoms of this highly intelligent, well-educated patient consisted in a frequently recurring embolophrasic "er" preceding words which began with the sounds *s, sh,* and *f;* a remarkably retarded and unrhythmical speech that was often interrupted by hesitation of shorter or longer duration. On occasion he resorted to bridging these pauses with the above-mentioned "er." While speaking, his gaze wandered about, evading the examiner's eyes, his hands were in his lap but the fingers in constant motion. In addition, there was always evidence of incongruity between thoracic and abdominal breathing and flaring of the nostrils.

This patient could not give more than one evening a week for treatment. The first therapeutic attack was to discuss in detail the events that brought about his stuttering. It was suggested to him that the manifestation of a speech impediment at the precarious moment in his life, which he had described, was a subconscious measure of protection. The mental mechanism appears to have been the following; "If I am not permitted to speak, I shall not be able to speak." The patient understood and agreed with this reasoning but made the logical objection that his speech impediment recurred whenever he had to face new situations although these, *per se,* were completely innocuous. He was soon convinced that every time he met new people he was unconsciously reminded of his terrifying war experience and consequently reacted in similar fashion.

It was at this session that the patient suddenly remembered the onset of his original stuttering in childhood. It occurred after a circumcision he had to undergo when he was 5 years old. Whatever may be the indication for this operation, to a child it always has the stigma of punishment, a punishment that results in psychic trauma.[3] At one of the next sessions the patient began spontaneously to speak about the way the Nazis treated their war prisoners and that he himself had lost 40 pounds in a period of 6 months. We recognized that the patient had accepted the idea that castration anxiety had been the basic element in his speech impediment, although this was not especially mentioned to him.[4]

In this case it was necessary to repress the painful war experience—the association of displeasure (*Unlustgefuehle*) with language production—into the background of his memory and to substitute more recent pleasurable experiences (*lustbetonte*). This was achieved by familiarizing the patient with the physiology of speech and articulation. As soon as he not only mastered but actually enjoyed the mechanism of speech, a list of words was worked out that the therapist practiced with him—words that fit into the probable speech situations he would meet in his professional life. At this time it may be reported that he obtained the new position and managed it satisfactorily, to a degree that his employer thought it worth while to report his good adjustment.

Falsetto Voice in Men

The next aspect of speech training pertains to the subject of delayed voice change or persistent falsetto voice in the grown male. There were 4 such patients, their age ranging from 23 to 45 years. Their chief complaints were hoarseness, quivering of the voice while talking and fatigue after a short time with the sensation of a lump in the throat; finally some were upset by being called "Miss" when speaking over the telephone. As the organic signs in these individuals were negligible, the Ear, Nose, and Throat Department referred them for voice training. Their speech examination revealed a pitch characteristic of the female timbre, ranging approximately from *a* to *e'*, compared to the normal male speaking voice which is pitched at *A*(6). It was evident

[3] See Sigmund Freud's essay on Dostoevski's "Brothers Karamasoff." Every punishment is at bottom a castration.

[4] The mutilation of prisoners of war is still a common practice in Arab countries.

that, though these men had developed normally otherwise, they had not undergone the physiologic voice change that ordinarily begins at 14 and terminates around 20. In no case was the high voice a sign of eunuchoidism, but it had been acquired at puberty during the period when the male larynx grows rapidly. As a consequence of the rapid increase in size, the various phonatory muscles of the larynx may fail to adapt themselves to the changing conditions in muscular coordination. There are also known to be cases in which the adolescent boy shuns the implications and duties of manhood for psychological reasons and wishes to avoid, or at least delay, assumption of the responsibilities of the adult. By continuing to employ his childish voice he subconsciously insinuates that he is still only a child.

This high-pitched voice in the normal male larynx causes constant tension, which is responsible for the muscular fatigue and hoarseness. Therapy consists in re-establishing the proper coordination of the laryngeal phonatory muscles so as to produce the physiologic conditions normal for a healthy male adult's voice. Basic breathing exercises with emphasis on a long regular audible exhalation are indispensable. To obtain the optimal physiologic tension of the vocal cords and thus the normally pitched voice, some authors recommend the use of frontal pressure on the thyroid cartilage(7). The clinic has obtained fine results without this measure by making the patient move his jaw rapidly and continuously from side to side while phonating. These quick movements bring about involuntary relaxation of all the phonatory muscles and the voice drops to the desired pitch. A few sessions are usually necessary to teach the patient to apply his newly acquired masculine voice in his spontaneous speech. In one case the normal, healthy male voice was established in the relatively short period of 6 weeks.

G. A. was referred for voice treatment. His diagnosis was phonaesthenia, and a previous bronchoscopic examination had revealed only slight inflammation of the vocal cords. The patient, a tall man with a tendency to obesity, was 29 years of age, married, the father of 2 children. He complained of hoarseness and stated that his voice frequently faded out to an almost inaudible whisper. He confirmed the suspicion that his voice had always been pitched rather high, a fact that did not bother him at all until at the end of a forced march in the Army during which the whole company had been ordered to sing; he then suffered a complete loss of voice. In a few days his voice came back but never lost the hoarse quality mentioned. The condition made him very miserable as his job consisted in interviewing people, an activity that resulted in complete voice exhaustion at the end of his working day. He had seriously considered training for another trade, a crucial resolution for a man who had to take care of a family. His voice examination showed the following results: the speaking voice varied between *a and e'*, his singing voice turned to a squeaky falsetto around *g'*. These findings indicated that the veteran's phonatory muscles lacked coordination or that there was a predominance of the tensor muscles, a symptom that has been described by Gutzman. This constant tension is transmitted over the whole vocal apparatus constituting a case for permanent voice fatigue.

Looking at himself in a mirror the patient was asked to imitate the instructor in shaking his jaw. As soon as he had mastered these movements he was instructed to practice them at home 3 or 4 minutes every hour, acquiring increasing relaxation by augmenting the velocity of the movements. When the patient was seen after 3 days he was taught to produce a tone while shaking his jaw. To his surprise he heard himself utter a tone with the timbre characteristic of the adult male's voice; the pitch was then exactly *A*, one octave lower than it had been. The acquisition of the deep tone was consolidated by different vowels and later the patient was told to produce the same tone without movement of the jaw. This he accomplished and the pitch continued around *A*. He learned to count and recite the days of the week first with and then without shaking his jaw. After 2 weeks a deep pleasing masculine voice had become his natural habit and a month later he had noted no recurrence of hoarseness or fatigue and was discharged from the clinic.

On Aphasia

In the opinion of Jackson (1932), Pick (1913), Head (1926), and Goldstein (1932-1942), an aphasic is a patient attempting to adapt himself to damage wrought in those parts of his dominant hemisphere that surround the Sylvian fissure. That regeneration of cerebral function and restoration of lost faculties are more complete in young than in old patients has been known since Broca gave the first account of his discovery that a disorder of speech, which he called aphemia, resulted from a profound but accurately circumscribed lesion of the posterior third of the second and third frontal convolutions of the brain. Recent research and experiments cast doubt on whether the brain has the

capacity of restitution of damaged or lost tissue but suggest that, in the neighboring lobes of the brain, cerebral tissues may be present vastly in excess of the actual need and that, in addition, various localities are available for the same purpose or, as Sherrington puts it, "We have no focus for the thumb but a map."

Aphasic manifestations can be grouped according to their predominant characteristics. Weisenberg's (1935) terminology based on Pick's "Die Agrammatischen Sprachstoerungen" (Prag, 1913) distinguishes in functional terms between expressive, receptive, and amnestic types. We have never examined a single expressive aphasic who did not present also receptive disturbances and vice versa. This terminology, though convenient for practical diagnostic purposes, might as well be replaced by the older distinction of a predominant motor and a predominant sensory aphasia; our clinical observations have not demonstrated a typical amnestic group. To avoid inexact classification of the type of aphasic disturbances, F. Schiller (in aphasia studied in patients with missile wounds, London, 1946) proposes the following terminology. To quote him: "Our findings imply association of a certain mixture of symptoms with some approximate area in the brain. This area is roughly predictable after careful estimation of the patient's responses to a wide range of psychological tests, and grading of the results in order of their predominance. Instead of the unsatisfactory classifications in functional terms, we might then have frontal, fronto-temporal, temporo-parietal and fronto-parietal types of aphasia."

An important factor in the restitution of the aphasic patient's lost functions is systematic reeducation carefully adapted to the loss of faculties in the individual case. It is essential that the practice work be closely related to the functions the patient must regain, such as articulation of speech sounds, or reading, writing, and arithmetic.

Two case histories illustrate the complex therapeutic efforts of the clinic with these types of patients.

In 1944 C. S., aged 32, had a fronto-parietal shrapnel injury on the left side of his skull approximately 2 cm. from the midline, the consequence of which was complete loss of speech and a hemiplegia on the right side. Soon after the injury a cranioplasty was performed, the fractured bone being replaced by a Tantalum plate 5 to 6 inches in diameter. The skull was partly flattened under the visible 6-inch scar. Since his injury the patient had had epileptic attacks at intervals of 6 to 8 weeks. In the fall of 1948, when first seen in the clinic, he walked with a definite limp of his right leg; his right arm was still partly paralyzed; his right hand was claw-like due to muscle spasm that originated in the parietal lesion. The tests for aphasia revealed the following: no weakness of conjugate eye movements, face, palate, or tongue; definite lack of facial expression but no facial apraxia; disturbance in articulation of the sounds *s* and *z;* marked tardiness and inhibition of speech; telegrammatic style or jargon sentences but no lack of ability to form his speech sounds with the exception of the *z* mentioned above; no paraphrasia; no perseveration in speech, though sometimes in writing. Stammering was not observed at any time during treatment. The ability to fit words to objects was slowed to 4 or 5 seconds, whereas objects were fitted to words without delay to spoken words. There was no impairment in grasping the meaning of spoken sentences and no difficulty in recognizing individual speech sounds or printed letters, figures, and simple shapes. It was entirely impossible for him to write with correct spelling on dictation. At the time of the examination there was no upper or lower quadrant hemianopia, no astereognosis, no loss of posture sense. Colors were correctly matched and named. There was no visual agnosia. Arithmetical problems were correctly solved although the tempo was slow. Coins were recognized and correctly evaluated.

The Head diagrams in which the left hand touches the right eye or ear were imitated by the patient whose left hand touched the left ear. There was disturbance of the patient's ability to understand complex written or printed texts; he changed unfamiliar words into words with familiar associations, as "colony" into "colonial," "sentinel" into "central," "toying" for "towering." It is suggested that the word paralexia be used to distinguish this not uncommon symptom.

In order to succeed, the rehabilitation training has to take into account not one damaged aspect only, but the whole personality of the patient, which in this specific case of aphasia meant that therapy could not be limited to exercises for the improvement of the language disturbance but also must include rehabilitation of the spastic hemiplegia. A rubber ball was placed in the patient's right hand and he was instructed to practice pressing and relaxing over the ball; it could be observed that the flexor muscles of his fingers were capable of some voluntary movements of adduction but the patient had no control over the extensor and abductor muscles—abduction being primarily accomplished through the elasticity of the rubber ball. At first the patient was unable to let go of the ball. To facilitate this voluntary movement we pressed with a finger on the ball and the patient suddenly was able to detach his hand. The pressure of our

finger was later replaced by a light touch with a pencil, a touch which in reality produced only a psychological effect. After 6 months of biweekly practice the patient eventually learned to open his hand spontaneously and without aid, but only recently has he learned to open his hand and drop the ball when his hand is not supported.

Exercises to enhance voluntary movements of the right hand also consisted of simulated piano playing on the desk. While practicing, the patient was constantly reminded to think that he was making these motions through his own will power, independent of outside help. Exercises were not limited to the hand and fingers but included the right arm and leg. A yardstick was put into both his hands and he was told to swing it up and down and to the right and left. These gymnastics forced the paralyzed arm to follow the movements of the healthy one—a practice to counteract muscular degeneration. In order to avoid fatigue, the exercises were constantly changed and at the end of each session the patient played ball and attempted to hit the ball with the paralyzed hand, which he finally was able to do after 5 months of practicing.

The second aim was to improve the patient's memory for speech, writing, and spelling, for the tests had proved that the translation of words into symbols of shape and space was grossly impaired. This program was centered around the acts the patient was still able to perform and consisted mainly of making him write down, with his left hand, sentences that were dictated to him. Disturbances that became evident during these exercises were the patient's forgetfulness of pronouns and articles, also his confused sense of spacing in writing. Time and again he tried to squeeze a 3-syllable word onto the end of a line where there was quite obviously not enough room for it. Attempts at writing with the right hand were not neglected although this never amounted to more than the writing of his name, numbers up to 10 and a few letters of the alphabet; an exercise that took more time and effort than writing a whole paragraph with the left hand.

This patient's progress was slow but uninterrupted; the most striking improvement was in his spontaneous speech; his sentence structure began to be correct and he took part in conversations in the circle of family and friends whose company he had previously avoided, because he was afraid to show his inability to speak. His face lost its masklike rigidity and began to express emotion normally. During 8 months of therapy the patient's epileptic seizures were reduced in frequency. Although he is still far from being cured, his improvement warrants continuation of this kind of training.[5]

The second case of aphasia concerns the 25-year-old C. W., who, in October 1947, had a craniotomy with incision and drainage of a left parietal lobe abscess at Kingsbridge Hospital.

When this patient was first seen in the speech clinic in January, 1949, his aphasic syndrome briefly described consisted of slight weakness of the dominant hand, jargon speech, inability to write spontaneously or on dictation, inability to write most of the letters of the alphabet, inability to grasp the meaning of complex printed material, complete failure to do problems of calculation. Despite these deficiencies nonlanguage intelligence tests confirmed his high intellectual capacities. During the war the patient was pilot officer and later had taken 2 years of college training in mechanical engineering. C. W., who was well aware of his impediments, presented a picture of black despair without hope of recovery. He was accompanied by his mother, who seemed rather reluctant to arrange the necessary appointments for aphasic rehabilitation of her son. She was an overprotective, possessive type of woman and stated that she could help her son with his writing. It took considerable persuasion before she consented to work out a temporary schedule with the Red Cross for transportation of the young man to the clinic. A side light worth mentioning is that the patient has not missed a single session since January, 1949.

Since it was a *sine qua non* not to discourage this patient, treatment began by choosing assignments that we knew he would be able to handle. A 5-syllable sentence was put together out of letters of an anagram and C. had to copy the sentence with another set of these printed letters. This was practiced several times until the patient could put the sentence together without the pattern before him. Soon we advanced to a more complicated task, that of copying the sentence in his handwriting. With an expression of hopelessness he took his pencil in hand, but to his complete surprise he knew more than he suspected—the drill with the anagrams had already been helpful in replacing the lost engrammes. Whenever he failed to know how to write a letter he was coached in making the correct motion, as, for instance, for "l" a loop above the line was recommended, for the "g" the bow under the line and "o" and "a" were little circles. When similar suggestions failed to work we resorted to leading his hand. Kurt Goldstein's(8) method of using pictures to be identified with objects such as "flag" for "F" or "snake" for "s" in mentally retarded children was considered, but not used because it did not seem of particular use in this case. It was amazing how quickly the young man regained his knowledge of writing and as early as the second session handwriting ceased to be a problem—a success that raised his morale and increased his determination to carry on to recovery.

The restitution of spelling was the next goal. During the dictation of short, simple phrases it became evident that the patient was unable to identify the sound of a letter with its written symbol; while writing the word "was," for instance, he failed to remember the "s." Encouragement to listen to the word for the last letter was no help; even its frequent repetition with special emphasis on the final sound did not bring about the correct association. The patient was very much perplexed

[5] While this paper is in progress, the patient has learned to throw the ball with his right hand.

when he was finally told to put down the "s." This happened time and again with sounds of the second and third articulation zone—a symptom called acoustic or auditory agnosia. It seemed to indicate a disturbance in active coordination between areas 40 and 22 of Brodman's cyto-architectural mosaic of the cortex or the destruction of fiber paths between the left angular gyrus and the first transverse gyri of Heschl(9).

During the entire training we noted 2 different kinds of restitution—one that of renewed learning, the other of spontaneous recovery; the patient himself stated that it seemed to him as though a veil was being withdrawn. The improvement was not without ups and downs—the ups when he was able to write from dictation, without notable mistakes or hesitation, the first and second stanzas of "Annabelle Lee."

Exercises for the rehabilitation of C. W.'s arithmetic were practiced at the same time and as the patient was unable to add 2 and 2 he was made to count 4 toothpicks of different colors and to place them into 2 equal parts; exercises progressed to 18 toothpicks and he then proceeded with addition, subtraction, and systematic training in the multiplication table. One obstacle proved to be the relearning of carrying over and we suspect that for a long period C. will carry over without really understanding what he is doing.

In order to strengthen the right hand and recondition his right side to intricate muscular coordination, we played ball with the patient insisting that he use the right hand; he was taught many dance steps, which were practiced at the end of each session and avoided feelings of fatigue and monotony.

The results obtained in the clinic's aphasic patients confirm Pavlov's findings. He demonstrated more or less conclusively that the cortex is a mosaic of function in which nothing is permanently fixed except motor and various sensory areas—that it is a kaleidoscope with the infinite possibilities of inhibition, adaptation, and substitution in mental emotional processes.

Speech Rehabilitation in the Hard of Hearing

Deterioration of hearing partially deprives a man of the acoustic control of his voice and speech mechanism; he speaks either too low or too loud and loses his speech melody, which usually consists of 6 consecutive tones —the speech sixth—and whenever his hearing for higher frequencies is impaired, the enunciation of the sibilants (s, z, th, sh, ch, and j) suffers, since the formants of these consonants range from 2048 d. v. to approximately 8192 d. v. (c^6). Decrease of hearing in the high frequencies makes *s* sound like *t*. Such acoustic dyslalias modify the speech of these individuals to such an extent that they can hardly be understood.

Samuel J. Kopetzky(10) states that the speech degeneration of the hard of hearing is partially influenced by psychosomatic factors; the individual discovers that his present speech experience based on his hearing loss no longer corresponds to his acoustic experience of former times and consequently the voluntary attention that he formerly used in enunciating is lessened.

A case history is introduced to describe the therapy employed. The special rehabilitation unit of the Veterans Administration referred the 32-year-old P. C. for speech improvement. P. C. had had a middle ear infection at the age of 14; since that time his hearing had deteriorated progressively and during his service in the Army became still worse. His hearing loss consisted of 40% of serviceable hearing on the right and 60% on the left. P. C. wore his vacuum hearing aid in his left, poorer ear. He had formerly taken a course in lip reading in the Navy Hospital in Philadelphia. This man had no trouble whatsoever in following a normal conversation since he had apparently learned to combine acoustic and visual stimuli. In amazing contrast to these excellent aural results, his speech was practically impossible to decode and an analysis of it resulted in the following observations: complete loss of speech melody with resulting monotonous voice; the labio-dentals *f* and *v* were substituted for by *p*; the articulation of the dentals *s*, *z*, and *th* was identical with *t*, whereas *sh*, *ch*, and *j* resembled somewhat a bilateralized *tl*. Such degeneration in articulatory preciseness can be explained only by the fact that his original hearing loss took place at an age when the engrammes for movements of articulation in the motor speech center were not sufficiently well established to endure when acoustic stimuli failed to reinforce them. The hearing aid, which the patient had only recently acquired and which compensated for his hearing loss, could nevertheless not help him to improve his speech, as faulty speech habits were too well established. The patient knew that something was wrong but did not know what to do about it.

It was considered wise to attack the speech and voice problems simultaneously. In order to regain some modulation in speech, the patient learned to sing the vowels on different pitches. Although normal speech requires only approximately the tones between *A* to *E*, the patient was trained to sing 2 octaves; this he enjoyed very much and it helped to establish his confidence in his hearing.

The consequence of this musical acuity could soon be heard in his speech since he began automatically to apply the musical accents. To correct his speech we had to establish new muscular coordination paths. The patient practiced the *f* and *v*, the voiced and voiceless consonants, blowing the

air between lower lip and teeth, and was made to feel the vibrations of *v* with his palm against the instructor's throat. When he had corrected his articulation of these sounds, they were introduced into sentences. A similar approach was used for learning *s*, except that then the patient had to blow air through his teeth; the glass tube of an eye-dropper was placed in front of his incisors through which he could feel the current of air leaving the mouth at the middle of the dental circumference with his finger. In this step again the sound had to be practiced first alone and then in words and sentences in the initial, medial, and final position, until its correct enunciation eventually became automatic.

The most complicated task of all was the retaining of *ch* and *j*. These consonants are composed of *t-sh* and *d-j* (*j* as in beige). To obtain the desired result the patient had first to practice these in their component parts before he could proceed to synthesis. The complete treatment took more than 6 months and, although his spontaneous speech is far from perfect, P. C. could at least be easily understood—an accomplishment worth the trouble and time spent.

Summary

This concludes a detailed account of 1 year's work of the speech therapist at the Mental Hygiene Clinic in Newark, N. J. Altogether about 100 patients have been tested, of whom 80 have been under regular treatment more than 3 months.

This, our first year, has been a year of organization and of hard work. We had to earn the confidence of our co-workers in the clinic and the Veterans Administration Medical Officer's satisfaction with our achievements. Last but not least, we had to be worthy of the faith, affection, and gratitude our patients bestowed upon us.

The work has been especially gratifying since most of the patients are in the prime of life and suffered their infirmities while fighting for the ideals of our country that were threatened. They deserve all the help it is possible to give.

This survey has by no means exhausted the entire field of voice and speech disorders. It is hoped that the knowledge and practical experience gained over a period of more than 20 years and the diversity of the clinic's material may be utilized not only in the Veterans Administration but in mental hygiene clinics everywhere. Successful treatment of speech disorders pays big dividends in terms of restoring the individual to an economically useful life and in relieving the taxpayer of the burden of supporting individuals so handicapped.

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DISCUSSION

McKenzie W. Buck (Iowa City, Iowa).—The field of speech pathology has, for the past 25 years, become increasingly research-oriented. Such is evidenced in the professional *Journal of Speech and Hearing Disorders* (formerly *Journal of Speech Disorders*), published by the American Speech and Hearing Association. The Journal is accompanied by an Annual Directory of *qualified* speech pathologists. Throughout the publications of this Journal and recent textbooks, we find the approaches to alleviate speech disorders are predominantly based on modern experimental results.

It is felt that this paper, for the most part, has not taken cognizance of the aforementioned studies with regard to each area of the field of speech pathology. Because of limited time for this discussion let us confine our comments to a brief review of some of the factors or conditions that produce stuttering on the basis of experimental investigation.

Scientific findings to date, considered together with general clinical observation, indicate quite definitely that stuttering is a *learned* behavior. It is interesting to note that no child thus far studied has been found to be perfectly fluent(2). All children and adults speak nonfluently to some degree. Repetitions apparently begin with the birth cry and continue through infancy(3). Throughout the course of maturity there is nonfluency; however, a relative amount of it decreases noticeably from infancy to adulthood.

In most homes this normal nonfluency is almost completely disregarded. Most parents are greatly surprised to learn that the average child repeats 45 times per thousand words(2). When considering entire cultural groups, one finds some interesting observations. Among certain tribes of North American Indians, for example, there is either no stuttering or practically none. If there is it appears to be evaluated differently from the way it is among ourselves(1, 4, 7). Apparently, there are few anxiety tensions regarding the fluency of the child's speech among these cultures.

We may surmise here, then, that most children, about 99% (3), are permitted to develop speech containing its nonfluencies, without being made self-conscious by an oversolicitous environment. The reasons for stuttering are not to be sought "within the child's head," but "within the parent's head"(6). The environment apparently varies; what may be noticed as "stuttering" one day may be disregarded again a week later.

According to a study by Johnson(5), stuttering does not occur before it is diagnosed, but occurs *after diagnosis*. Once the parents have persuaded themselves that the child is stuttering, and label the child, he becomes aware of the parents' tension, and stuttering is apparently initiated.

This, in essence, is how stuttering begins and develops, as indicated by experimental investigations.

Rare is the instance when a stutterer is referred for psychiatric treatment *per se*. There is no evidence that stuttering is of a psychotic nature. Indeed, most psychiatrists report very little if any stuttering among functional psychotic patients. It is also interesting to note that the feebleminded rarely show any stuttering as defined by the population.

These stuttering individuals, with the exception of the speech pattern, appear to be as normal as the general population, *i.e.*, intelligence, personality, etc. With these and other studies in mind, it hardly seems conclusively adequate, to this discussant, to approach the stuttering problem through psychoanalytic channels.

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EMOTIONAL PROBLEMS OF MALADJUSTMENT IN CHILDREN WITH READING DIFFICULTIES

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The history of all types of handicapped people—the blind, the lame, the deaf, the mentally defective and those handicapped in reading or speech—is parallel with the history of the mentally ill. Only in the past 50 years has the suffering of the physically and mentally handicapped been somewhat eased. Today they are less misunderstood. They are no longer rejected or made the laughing stock of others.

Emotional Factors and Reading Difficulties

Our experience and research of today show evidence that emotional factors are frequently found to accompany reading difficulties. These emotional factors may be either causes or results of the handicap. A person with a reading difficulty is not well adjusted to life and frequently suffers shame, fear, or frustration. Children with reading difficulties are regarded as an unfortunate group and different from normal. For that very reason, if for no other, an emotional factor of one type or another is involved.

The problem of school failure is one of prime importance to American parents. It invades the sacredness of the home and disrupts the unity of the family. Under the stress of emotion caused by school failure, both the parents and school may be guilty of rash judgment and attribute a child's failure to lack of ability or a physical disability such as poor eyesight or poor hearing. The authors agree that any one of the above may admittedly be a cause of a child's failing in school. Low intelligence may certainly cause a child to fail in school work, be it reading, spelling, history, or geography. However, what about those children whose intelligence is normal and above, whose physical condition is average and above, who yet fail to achieve successful grades in school?

Physicians and educators have long been aware of the existence of emotional reactions to failure in learning to read. Reading is a basic school subject and is the tool that is used to learn all other subjects. Learning to read affects not only the intellectual but the emotional life of the child as well. Reading difficulties in children are either physical or psychological in etiology. It is apparent, however, that the percentage of physiogenic difficulties is small in comparison with those of emotional origin. To analyze these difficulties is not always easy. When they have a psychological etiology, it requires the experienced help of an educational psychologist and a psychiatrist to clarify the emotional condition of the child. It may be that the child's experience during the first few school years, especially in his reading lessons, was emotionally charged to such an extent that he has formed an emotional reaction that manifests itself in his resistance to reading. It is also possible that an emotional resistance may be determined by the environment of the child long before any reading lessons are attempted.

Writing in the *Journal of Experimental Education* in 1935, F. L. Wells(1) declared that a reading difficulty may be a means used by the child to react to difficulties of home adjustment similar to tantrums and stealing. In 1928, P. Blanchard(2) listed "day dreaming," "lack of interest," "seclusiveness," and "absent-mindedness" as symptoms of personality maladjustment in the reading cases that she treated. Mary I. Preston(3) studied 100 reading cases and disclosed that frequently children with reading disabilities come from homes where they are overprotected and treated as infants. In the child's frustration at being unable to read he would try to gain attention by antagonizing rivals,

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teachers, other siblings, and becoming increasingly hostile in character.

Such studies as those reported above would indicate that a school disability might be considered either as a cause or an effect of emotional disturbance; that is, reading failures have been attributed to emotional problems and, conversely, emotional problems have been said to be created by reading failures. Whether the emotional condition be the cause of, or the effect of, a reading disability, it must be treated if the youngster is to be guided from the road to social maladjustment and possible delinquency that might result from reading failure. It is axiomatic that each individual possesses within himself the power of change, but sometimes the environment must be modified to a certain extent to help the youngster to motivate himself. It is, therefore, important that the environment of the child be studied to determine the rôle it may play in contributing to an emotional disturbance that results in school disability.

In the classroom with other children, the poor reader has to compete with average and often superior pupils. As a result he feels inadequate and inferior to them, and he soon becomes apathetic and indifferent to school. Many poor readers are oversensitive and develop a marked feeling of inferiority that may result in antagonism toward the teacher. Not infrequently they become disciplinary problems. There is no question that both emotional problems and specific reading difficulties may be present in the same child with each set of factors having an independent origin. A good clue to the presence of such a situation is offered in the child's response to remedial effort.

It is interesting to note that according to Gates(4) poor readers of adequate intelligence do not display any characteristic personality patterns nor are they consistently inferior in any personality or emotional trait. Naturally, the causes of poor reading vary from case to case, and the cause of failure in one person may lead to good performance in another.

The Teacher-Child Relationship

It is important for the child to have a teacher who understands him, who has genuine interest in him, who makes a real attempt to cope with the underlying problems of his reading difficulties, and who endeavors to help him with patience and love. It is highly desirable that the teacher and the parent be made aware of the causes of reading difficulties. They should be brought to recognize the importance of reading handicaps as well as the importance of their own attitude toward them. They should have some basic knowledge of the role of reading in the life of the individual and a knowledge of some general principles that they can use to help the child to overcome his difficulties.

Unfortunately, there are many who do not understand the facts and implications of reading problems. Therefore, they fail to help the child improve. An anxious attitude on the part of teacher or parents should be avoided. All children do not learn to read at the same age. The child should be trained to develop an independent personality allowing him to mature according to his age and not remain infantile.

The treatment of a reading disability is the task of a specialist who not only must be familiar with the latest in school methods but must be able to work with the psychiatrist who is treating the child. The reading specialist supports the symptom; it is he who must roll up his sleeves and work with the youngster when the boy or girl is *ready* to work on his reading. He must determine at what level the youngster is able to read successfully and by careful planning begin to build the child's shattered confidence in his own ability. He must accept the youngster's difficulties and share with him his successes and failures. At the beginning, the reading teacher must allow the youngster to enjoy success even if it only means the learning of one or two words each day. The reading specialist must also have a remedial program outlined to be followed, and step by step lead the youngster to successful mastery. One must crawl before one walks alone. The reading specialist supports the crawler but he must also know when to allow the youngster to walk alone.

The teacher-child relationship is extremely tenuous. Any well-adjusted teacher realizes that it is not he who is being honored by the adulation piled on him by the youngster.

Hero worship is a dream of the young. Furthermore, the real teacher accepts any hostility that may be directed at him not as personal insult but as misdirected hostility that the youngster may be expressing. Under such a philosophy, teaching becomes a pleasant profession. The child's emotional development is directly influenced by the personality of the teacher, and the remedial teacher must play his part as authority and a friend of the child. It is a difficult and dual role but it is a realistic picture of the role of the remedial specialist in a child's environment.

We have already mentioned the importance of emotional factors relating to personal maladjustment in children with reading difficulties. Perhaps the principal emotional factors responsible for the maladjustment of these children are a need for affection and a need for the feeling of accomplishment and success. In these cases proper guidance and socialization are lacking. It seems that these children have usually been victims of nagging, of pampering, and of introversion. The latter is especially apparent in children from 6 to 12 years of age.

Family Life and Reading Disorders

Family life is practically the basic foundation of personality development and reading difficulties may occur in any kind of family, independent of its status. We have found, moreover, that in families in which both the mother and father have extensive academic educations the children frequently do have difficulty in learning to read. Perhaps these problems arise in such families because they put the standard too high from the beginning. In this way they provoke resistance and revolt. Possibly the father is too busy and too aloof from the child, who hears of his father's success and feels unable to compete with it. The anxious mother may study with him too frequently and too much and may baby him in such a manner that he is unable to compete with others. If there are siblings who do well in school and learn with ease, and if the poor reader is one of the younger children, he may be neglected and in need of much affection and love. As a result he may simply refuse to read. So, in every case one must decide upon the specific nature of the present problem. Is the father the cause? Is the mother the cause? Is it the result of sibling rivalry? Or is it a combination of these and other causes? "Shyness," "lack of companions," "inability to form relationships with others," were listed on the symptom sheet of a college professor's son who was treated in our clinic. The child had a chronological age of 8 years, and a mental age of 10 years, 2 months, but was 2 years retarded in reading according to grade placement. A correct diagnosis of cause is extremely important in order to get good results in therapy.

Reading disorders are often due to an earnest and exaggerated attempt to teach the child to read before he is able to do so. We never know exactly at what age a child is ready to read, for the age of reading readiness varies considerably. It is, therefore, useless to try to teach the child to read before he reaches this age. Readiness for reading probably occurs when the intracortical connections between the various brain centers have reached a stage of maturity. This takes place anywhere between 4 and 10 years of age. If one tries to teach a child to read before he is ready he does not understand the whole procedure but he may feel a strong need to please the adult.

Closely related to reading readiness is a condition known as strephosymbolia, which is, in a sense, mirror reading. The words appear as they would in a mirror, "was" for "saw." This is due to the fact that the dominance of one cerebral hemisphere over the other has not been established. Strephosymbolia frequently appears in the first grade and is to be regarded as a reading disability only if it persists beyond grade 3. Furthermore, strephosymbolia is often associated with a change in handedness.

There are a few children who have reading difficulties that are the result of complicated emotional problems concerning the use of written or spoken language. These difficulties result from a fear of the use of language. Recently, a child was brought to the clinic because "he was failing in oral reading." He was a boy of 9 years with a

mental age of 11 years, and testing disclosed him to be 18 months retarded in reading according to his grade placement. A study of his case revealed that his mother spoke a foreign language and his father spoke English. It was necessary for the youngster to speak one language to his mother and another to his father, a fact that was directly related to his reading disability.

The Guidance Clinic's Role

In the present-day child guidance clinic a child will not be taken for treatment without the active cooperation of his parents. The parents must be made aware of the underlying factors that have caused their child's reading difficulties. They must give up their own rigidity, anxiety, worry. In the clinic an educational psychologist should work daily with the child and give him confidence in his ability to read and to succeed. If it is necessary, a psychotherapist should work at least once or twice weekly with the child in order to help him understand his condition and the cause of his difficulties. These periods with the psychotherapist can be a great benefit to the child.

The educational psychologist is a co-therapist with the psychotherapist in helping the child to attain personal confidence and self-understanding. The psychiatric social worker works with the parents toward a better understanding of the child and the reasons why the child is unable to read. Through the medium of the diagnostic conference the clinic team is better able to understand the entire environment of the child. Such knowledge aids the clinician in planning an individual remedial program based on the child's specific needs.

In conclusion, the cooperation of the parents, the teacher, the educational psychologist, the social worker, and the psychiatrist should be enlisted in order to help the child. Many cases, though not all, need the help of a psychiatrist or a child guidance institute that has a remedial clinic. The solution of mental conflicts may need the aid of many disciplines. It is quite as important to know what kind of person has a disorder as it is to know what kind of disorder the person has. Mental and emotional disorders occur in the sphere of action between the individual and the group. Dangerous friction arises when the will of the individual and the desires of the group are in opposition. Working equilibrium between these two is essential to normal living. Effective remedial teachers obtain all available knowledge of the patient. This includes data on physical health, intellectual capacity, temperament, and character. Effective psychotherapy cannot permit generalities. It must deal with the individual human being and his specific environment.

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INFERENCE TESTING IN PSYCHOTHERAPY [1]

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In the beginning was the word. But it was unclear and ambiguous, and God only knew what it meant. Since we hope to make ourselves intelligible to a wider audience, we shall start with some definitions of the key words in our title.

First, what do we mean by "inference"? Inference is a cognitive process in which some fact, assumed or perceived, is taken as logically justifying belief in the occurrence (or probable occurrence) of some *other* fact, which at the time is *not* perceived. A parallel definition, in terms of symbols, is that inference is a cognitive process in which some statement (or set of statements) accepted as true (or probable) is taken as logically justifying belief in the truth (or probability) of some other statement.

By "inference testing" we refer to a procedure by which we attempt to justify the truth-claims expressed in making an inference. Such an attempt is "successful" when the operationally established facts of observation either directly *verify* or indirectly *confirm* (to a sufficient degree for some purpose) the inference.

"Psychotherapy" is a word with several meanings, but we shall intend by it the use of psychological means to mitigate symptoms, to resolve conflicts, and to improve generally the patient's adjustment, *i.e.*, his efficiency, his self-understanding, and his capacity for the enjoyment of life. The means used are called "psychological" because their efficacy depends in part upon the *meaning* they have for the patient.

In this paper we are primarily concerned with the *logic* of inference testing. All thinking is fundamentally a process of making inferences. But, as psychiatrists, we are likely to be chiefly interested in the causal determinants of these inferences, *i.e.*, in trying to answer the factual question why does (say) a certain patient infer or believe such-and-such a statement. But as logicians (or indeed simply as therapists trying to understand symptoms and evaluate treatment) we also want light on another and different question—a so-called *normative* question. Hence we sometimes ask ourselves (though probably not as often as we should) if a given inference, whether a patient's or our own, is valid or a given belief is sound. Obviously we presuppose that we have answered this latter question when we classify a patient's perceptions as hallucinatory or his beliefs as delusive or when we conclude that our therapeutic measures are at least partially responsible for a patient's improvement. Thus psychiatrists not only face basic logical problems in classifying and interpreting a *patient's* inference and beliefs; they also face the same kind of problems in evaluating their *own* thinking processes—and should not logic, like charity, begin at home?

Let us take a quick look at the logical structure of the psychotherapeutic situation. What kinds of data constitute the evidence from which a therapist draws inferences? We know they are such things as the patient's words, including the way in which they are uttered—particularly such features of the utterance as rate of speech, periods of blocking, whether the manner of speaking is, for example, easy, fluent, and self-confident or nervous, halting, and embarrassed. Also endless variations in facial expression are noticed, along with such obvious vasomotor phenomena as blanching or blushing. The whole pattern of the patient's overt behavior is carefully watched for signs of different emotions, habits, attitudes, conflicts, and so on. It would be impossible, and for practicing psychiatrists it is fortunately unnecessary, to list all the possibly significant feat-

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tures of such clinical patterns of behavior. Complete protocols describing such behavior-sequences have never been formulated, and from the nature of the case they cannot reasonably be demanded. Even the longest and most detailed verbal report of what happens in (say) a psychoanalytic situation expresses but a pitifully bare and inadequate set of abstractions when it is compared with the total concrete reality, *i.e.*, the patient reacting to the given situation. When we consider further that this "given situation" evokes the responses that it does because of the meanings it has due to the prior experiences of the patient in an unknown, but large, number of antecedent and related situations, plus the unmeasurable, but probably great, causal significance of hereditary factors, the wonder is that more therapists, being overwhelmed by the complexity of the relevant facts, do not sink into a catatonic stupor.

One point stands out as obvious. Since the past is irrevocable and can only be described by symbols or relived in imagination, no therapist can *directly* verify inferences about (say) the patient's early life, but can only collect data, in the present, that more or less justify, *i.e.*, indirectly confirm, inferences to the past. The future is "off there" in the opposite temporal direction, but in many ways the would-be knower of it faces similar problems of verification. However, there is this important difference: if we live long enough and are at the right places at the right times, our predictions can be directly verified by the perception of the facts described. It is true, of course, that if no inferences to the past were valid we should have no empirical basis for making inferences to the future, even though (as the pragmatists have emphasized) inferences to the past can only be *tested* by reference to present data and future eventualities—the order of genesis being the reverse of the order of evidence.

So far we have considered only inferences to the past or to the future behaviors of the patient. But this of course grossly oversimplifies our problem. For there is the obviously relevant question of parents, siblings, and other psychologically important figures in the patient's history. But we shall postulate that the order of credibility (to use Russell's phrase) of inferences to such persons and their behaviors is roughly similar to that of the patient's past behaviors. Likewise for the future.

However, this still leaves a very difficult logical problem concerning another dimension, so to speak, of the patient's behavior. Thus if a psychoanalyst tells us that his patient's dyspnœa or aphonia is a symptomatic expression of certain "pathogenic ideas" related to repressed "oral" material, of which the patient is completely unaware, how is such an inference to be validated? Even the miracle of being transposed into the patient's past, plus access to his introspective contents as well as overt behaviors, would not enable the therapist to perceive the repressed pathogenic idea.

Why? Well, it might be replied that a repressed idea, or if you like, an unconscious supervalent phantasy that has met with an even stronger ego counter cathexis is simply not the sort of thing that anyone *can* directly perceive, as one can perceive, for example, this or that color, sound, taste, odor, and so on. Very well, but then what is the nature and status of the referent, if any, that is designated by such a symbol as "repressed idea"? The complete works of Freud are surely the best, if not indeed the only, answer to this question. But, though the ceiling is low, we shall take off, for a short flight, into the surrounding fog.

It seems correct to say that such a symbol as "repressed idea" does not designate any *phenomenal* meaning, *i.e.*, any referent which is directly get-at-able either in sensory perception or through acts of introspection. For being an "idea," it is, by definition, not literally exhibited either in the sensory contents of perception or in patterns of overt behavior and, being "repressed," it is by definition below the level of awareness and hence not open to acts of introspection. *What* is it then and how do we know about it at all? Patently, we cannot be *acquainted with* such a repressed idea, and hence our *knowledge about* it, if we have such a knowledge, must depend upon the validity of our inferences to it—inferences that, in the last analysis, are empirically based on data with which we *are* directly acquainted. If this epistemological analysis is accepted, then the symbol

"repressed idea" designates, presumably, some kind of metapsychological "construct." Anyone who is compulsive about achieving clarity and exactitude in his symbolic references and who therefore tries to find out what, *precisely,* is the nature of such a construct is likely to develop some pretty severe psychogenic headaches. For the semantical problems involved are as difficult as they are important. Obviously it would take a long book, not part of a short paper, to deal adequately with all the logical and metaphysical ramifications of this problem of constructs.

But, very roughly and briefly, as we see it, such a metapsychological construct is symbolic shorthand for a complex, and ordinarily a very inadequately specified, set of private data and public behaviors. Surely, there is no such "entity" as a superego or an unconscious sexual phantasy: Does this statement imply that such Freudian language is meaningless? No, of course not, but it does suggest that the *kind* of meaning such symbols possess is a matter requiring some little explanation—since their meaning is more than meets the eye, either the inner or the outer eye. The value of such metapsychological symbols appears to lie not so much in their power to describe behavior-sequences as in their power to orient us cognitively (or perhaps mainly to reassure us emotionally) in a confusing welter of impressions. How they do this is hard to figure out, but—if we are not going to fall back on belief in word-magic—it is evidently through their being connected in our experience, however vaguely or uncertainly, with lower-order symbols that *do* describe something observable, *i.e.,* events in some recognizable spatio-temporal patterns.

Thus we may, with some hope of success, look for the factual meaning of a term like "super-ego" in the complex matrix of interpersonal behaviors. With enough good thinking and careful experimenting, no doubt we could achieve a fairly adequate description, in operational terms, of the kinds of behavior that express super-ego functions. In fact, this has already been partially achieved. Whether, after this were fully accomplished, it would still seem useful to ascribe these particular sorts of behaviors to the activities of a super-ego is, in our opinion, a question that ought to be left open. Our guess, however, is that, once we knew the empirical sources of such behaviors, and the laws that describe their functional interrelations, we should have no use, either theoretical or practical, for the term "super-ego," any more than modern psychologists, generally, find the word "soul" a useful intervening variable. Hence, if the power to predict and control be our criterion of knowledge, as well as the measure of our respect for a man's contribution to knowledge, we might decide that doing justice to the epoch-making importance of Freud's basic insights does not require us slavishly to follow his use of language.

Speaking of Freud, let us practice what we preach by coming down the abstraction ladder and examining certain features of his famous case—that of Dora. Dora, you will recall, suffered from (and no doubt also enjoyed) a spasmodic cough. What did this cough *mean?* No one who has read the case is likely to forget, but Dora, at any rate, did not know that, as Freud puts it, "the conclusion was inevitable that with her spasmodic cough, which, as is usual, was referred for its exciting cause to a tickling in her throat, she pictured to herself a scene of sexual gratification *per os* between the two people whose love-affair occupied her mind so incessantly." [4] Freud argues, with a good deal of plausibility, that the cough was a conversion symptom that "expressed" the "unconscious phantasy" that her father was having sexual intercourse *per os* with one Frau K., toward whom, as it turns out, Dora had very deeply repressed homosexual impulses. But we shall skip this latter inference, the plot already being thick enough. Now "suck-a-thumbs" Dora, in answer to Freud's questions, admitted to knowing in general about nonorthodox ways of "obtaining sexual gratification" and to knowing in particular about oral-genital contacts, so that we are unclear, on the basis of the reported evidence, just why Freud felt convinced that the oral phantasy concerning her father and Frau K. was "unconscious," instead of—as

[4] Freud, Sigmund. Collected Papers, Vol. III. Hogarth Press, Third Edition, 1946, p. 59.

seems to us more likely—being simply *uncommunicated* to Freud by direct *verbal* means. But Freud seems half to admit this latter point if we take account of his statement, in the context, that "if the occurrence of the symptom were to be made possible at all, it was essential that she should not be completely clear on the subject." [5] No, not "completely" clear, perhaps; but she may have been *partially* clear, and her reported answers seem to indicate that the phantasy was certainly not "completely" unconscious. What Dora does seem to have been unconscious of—like the majority of the medical profession at the time, if not at present—was the etiological connection between her more-or less unconscious, "supervalent" erotic phantasy and her spasmodic cough. Shortly after, with Freud's help, gaining an "insight" into this causal relationship, she evidently discharged her pent-up libido in other ways. Her cough, at all events, "vanished." But Freud, you will recall, did not fall into the tempting *post-hoc-ergo-propter-hoc* fallacy of imputing the vanishing of the cough to Dora's new-found insight; for he adds, with exemplary scientific candor, that her cough "often before spontaneously disappeared."

One logical problem here is whether the fact of the cough—considering the times at which it occurred, as well as its type and severity, along with the many other signs that Freud indicates in the context—justifies the inference to the unconscious sexual phantasy. A related but different problem is whether this phantasy was the cause, or at least a necessary part of the cause, of the cough. Here we find ourselves in a veritable thicket of logical problems, and not merely logical ones, since at least some of the (evidently) relevant data are hopelessly obscure, if not indeed (as some critics would argue) completely inaccessible to "objective" scientific procedures—a "third ear" and perhaps an extra frontal lobe being required for the task. For those of us with only standard equipment, this situation may well seem discouraging. But, without pretending to solve the problem, perhaps we can clarify it a little or at least suggest some of the logical conditions that will have to be met *if* it is going to be solved.

We may quickly agree on a few points. Obviously, the cough—if a sign at all—was a natural sign of the underlying sexual phantasy, since there is no convention according to which a cough of *any* kind *means,* by socially instituted rule, some kind of unconscious sexual phantasy. This is true even though it *may* also be true that, in point of fact, some coughs are effects (or partial effects) of unconscious sexual phantasies. In short, the causal law (in question) might hold, without in the least implying that the effect, *i.e.,* the cough, conventionally designates its cause—or, in other words, that the cough is, *ipso facto,* a descriptive symbol. So, we may agree that the cough, if a sign at all, was a natural sign. But a sign *of* what and *for* whom? We must ask this latter question, for the reason that the sign-significate relation is not dyadic, but triadic, since the relation to be enstated must be mediated through an organism—specifically by a cognitive act interpreting the sign to mean something else. Now, if the sexual phantasy in Dora's mind was unconscious, the cough was not a sign of the phantasy *to her,* but to Freud who made the interpretation.

Let us try to determine a little more carefully the content of this interpretation. Put briefly, Freud said that the cough was a sign of (among other things) an unconscious sexual phantasy about oral intercourse. In making this interpretation Freud brought together in his own mind two obviously different sets of events, or rather, speaking more strictly, he brought together two sets of conventional symbols. These symbols not only have different referents but their referents differ, rather fundamentally, in nature and status. One of the referents, the spasmodic cough, is a public, easily identifiable biological reaction, the other referent, the unconscious sexual phantasy, is by definition something of which Dora was unaware and something of which Freud also could not have been aware, if we mean by "aware," as is customary, to designate a cognitive function by which a mind is *directly* confronted with such-and-such contents of immediate experience. So what Freud had in mind was a hypothesis, expressed in conventional signs,

[5] Ibid., p. 59.

that designated whatever he meant by "unconscious sexual phantasy." In other words, the phantasy in question was (we trust) not Freud's: he only had certain thoughts *about* it, and held certain beliefs regarding its etiologic role in bringing about Dora's cough.

The logical point here, which is of some clinical importance, is that the meaning of any word uttered or of any symptom exhibited is relative to some interpreter. Hence we must not, without sufficient evidence, project the meaning a sign has for us, as interpreters, into the unconscious of the patient. When this fact of the relativity of meaning is ignored, we are likely, with fatal ease, to fall into confusion and error. Needless to add, in saying this we are not imputing any such "displacement" of referents to Freud.

It will be useful, in considering Freud's interpretation, to distinguish three phases of it. The first phase consists simply in thinking of, making a reference to, a certain kind of phantasy; the second phase, in reaching the belief that such a phantasy existed in Dora's unconscious; the third phase, in making the causal inference that this phantasy was a psychogenic factor underlying her cough. How is this latter inference to be verified or (at least) confirmed? In order logically to examine this question, we may proceed as follows.

Let X stand for the unconscious sexual phantasy and let ABC stand for the cough and any other public factors that allegedly constitute evidence for the belief in X. Now under what logical conditions may we validly infer the truth of a statement asserting the existence of X from the truth of a statement (or set of statements) asserting the existence of ABC? If by "inference" we here mean formally certifiable inference, then the truth of our X-statement can be rigorously demonstrated to follow from the truth of our ABC-statements if, and only if, the falsity of the X-statement is shown to be inconsistent with the truth of the ABC-statements. To take a simple example, *if* "All surgeons are rich," and if there *are* any surgeons, *then* "Some surgeons are rich," [6] where the falsity of the conclusion is plainly inconsistent with the truth of its premises. Hence we may conclude that if our X-statement simply repeats, in whole or in part, the ABC-statements, then we are warranted in believing X on the basis of ABC, which reduces to the tautology that we are warranted in believing what we are warranted in believing. In short, A is A, come what may. But if this empty truism does not satisfy our demand for "real" knowledge, look at our predicament. For if X is different from ABC, then the meanings involved are, by definition, independently specifiable, and the inference from ABC to X is—from the standpoint of formal logic—a *non sequitur*.

What this obvious logical conclusion shows is that, if we are going to progress beyond a kind of logically justified echolalia, we must suppose that X is not identical with, but is (say) causally related to, ABC. If we do this, we may reason that if the observable factors ABC, then the unobservable factor X—which inference is of the same form as that made by Freud in going from Dora's cough to the sexual phantasy in her unconscious mind. Since the phantasy is not identical with any observable properties of the cough, formal logic cannot justify the inference. Hence this sort of problem is ultimately reducible, as Hume clearly saw, to the problem of how to justify causal inferences. But notice that before this problem in the Dora case can even be intelligibly formulated, we shall have to specify clearly the nature of this "X," *i.e.*, of this "formation in the unconscious." Obviously, we cannot determine whether a given statement logically follows from other statements unless we know what the statements involved mean, and we cannot discover, nor indeed rationally investigate, causal relations between X and ABC until we have *some* way of reliably identifying cases of X as contrasted with cases of ABC. For our causal hypothesis reduces to the tautology that X is X, or ABC is ABC, unless X is distinguishable from ABC. On the other hand, the causal hypothesis is meaningless, and so no hypothesis *about* anything,

[6] Incidentally, this example illustrates the important logical point that a false statement may imply a true statement. Hence, we cannot logically infer from the fact that the conclusion of an argument is true that any one of the premises leading to it is true. This latter sort of inference involves the fallacy of the "affirmation of the consequent," which is all too common, even in "scientific circles."

if we cannot show that by X we mean *some* thing sufficiently definite that X *can* be distinguished from other things (say ABC or DEF, and so on) and also has properties that can be identified as constituting the sufficient conditions for referring to it as a case of "X."

Applying this logic to the Dora case, we are saying that *unless* we can specify clearly and unambiguously the truth-conditions of the statement, "Dora has a sexual phantasy, of such-and-such a kind, in her unconscious mind," we are not in a position logically to infer *what* sort of relation, whether causal or not, actually exists between this "sexual phantasy" and her spasmodic cough. In short, it is not enough, even for purposes of intelligible speculation, to say nothing of empirical verification, to understand the semantical reference to only *one* of the terms in the alleged causal relation, *i.e.,* in this case, the cough, if we are asserting a connection between this term and some *other* term, the reference to which is *not* understood, or so poorly understood that semantically the two referents are not "in the same class," with respect to such relevant criteria as intelligibility, verifiability, measurability, and so on.

We recognize that it is impossible logically to evaluate a specific inference, like that of Freud's regarding Dora's cough, except in the light of some empirical context and relevant theory. Freud, like Wilson in interpreting the meaning of the fog tracks in his cloud-chamber experiments, was depending, to some degree, upon a whole set of theoretical assumptions, more or less well justified by his previous experience with similar cases. The logic of such procedures is obscure, but we may say, in general, that particular inferences cannot be adequately evaluated in isolation, for their validity is conditioned, is infirmed or confirmed in varying degrees, by the whole "system," and the way in which other, but related, particular inferences have "worked out"—the therapist relying, to a great extent, upon the *convergence* of evidence. Thus an organic chemist, who uses the freezing-point method for determining the approximate molecular weight of a substance, feels a good deal of confidence in his results partly because of his previous experience, as well as that of other chemists, with the particular method, but partly also because of the agreement in the results obtained by this method and other methods, as well as the intelligibility of these different methods in the light of a large number of other assumptions and well-established concepts in physics and chemistry. So also, no doubt, a psychoanalyst like Freud feels some reasonable degree of confidence in his interpretations and "results" in the Dora case because he brings to this particular case a whole set of beliefs, growing out of the study of previous cases, which beliefs, in a generalized form, function as at least tentatively accepted "laws" under which may be subsumed the empirical features of the given case.

The logical issue here, accordingly, is not a black-or-white affair, but is a matter of shades of grey. Still, even though no *sharp* line can be drawn between sense and nonsense, or between what has, and what has not, been proved, the field of psychotherapy plainly lies somewhere among the darker greys. For this reason, and because, too, the issues at stake are frequently of vital importance, we need in this area to be particularly on our guard against making untestable inferences.

SUMMARY

"Psychotherapy" may be defined as the use of psychological means to mitigate symptoms, to resolve conflicts, and to improve generally the patient's adjustment. In doing psychotherapy, the doctor makes inferences from both the verbal and nonverbal behavior of the patient. These inferences help the doctor to understand the patient and are used for purposes of interpretation. It is necessary to establish the validity of these inferences in order to make reliable predictions or to institute rational therapy.

All this, we realize, is easier said than done. But if we are going to be able to do it as well as possible, in spite of the limitations imposed by the nature of the material, we must formulate our inferences in words that are clear and unambiguous so that the statements in which they occur will be in-

telligible. Furthermore, if these statements are going to be not only intelligible but technically verifiable, we must be able to get at, and to identify, the facts inferred. When and only when these two logical conditions are fulfilled, are we in a position rigorously to establish the existence of causal laws of human behavior.

But we must admit that these statements express a scientific ideal that can be approached but hardly attained in the field of psychotherapy. Ideally, to be sure, inferences should be so formulated that they can be decisively verified(or disverified) by reference to public, reproducible facts, which can be precisely measured. But in view of the private status and inherent obscurity of some of the relevant data, we cannot, in the field of psychotherapy, achieve such logical perfection, but must be guided by the greater weight of evidence and be satisfied with a degree of confirmation that is pragmatically sufficient. However, without being neurotically perfectionistic about it, we may reasonably strive to increase the reliability of our inferences in this field. To do this, we must first define our terms, we must second verify the claim that referents for these terms exist, and we must third show that these referents stand in the empirical relations claimed. Only in this way can we know, with a sufficient degree of clarity, *what* things we are talking about, and *how* these things are related in nature—which is the kind of knowledge that, in its applications, gives us increased power to help our patients.

PSYCHIATRIC SYMPTOMS AND SYNDROMES IN PARKINSON'S DISEASE [1]

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Increase in the tremor in patients with Parkinson's syndrome under the influence of anger, tension, frustration, and fatigue is an established fact. Aggravation of the course of the disease and exacerbation of the symptoms following trauma, severe infection, or emotional upsets is not uncommon. In spite of these relationships, this disease is usually regarded solely as neurological and little attention is paid to the psychiatric symptoms and complaints of these patients.

Postencephalitic behavior disorders are common in children and young adults, and there are many excellent reviews on the subject such as those by Fairweather(1) and Greenebaum and Lurie(2). Psychiatric complications of Parkinson's disease are less well recognized but there are several instances recorded. Delay and Jounnais(3) write of 3 patients with postencephalitic Parkinson's disease who were subject to attacks of paroxysmal anxiety. These attacks lasted some hours and were associated with an increase in the tremor and rigidity. Urechia(4) describes 5 cases of curious paroxysmal attacks in which there are disturbances of affectivity, vegetative disorders, and sometimes a mild diminution of the field of consciousness. One of his patients committed suicide during an attack. Between attacks the patients presented no psychic disturbance. Olier(5) reports a case of a patient with Parkinson's disease who had paroxysmal attacks lasting a few hours consisting of autonomic disorders, emotional release in which he had a form of "sham rage," and great increase of rigidity and tremor. It is most interesting that these symptoms disappeared almost entirely when he was treated with scopolamine and benzedrine. Gillespie(6) reports a case with paranoid ideas, usually associated with oculogyric crises, of such severity that the patient had to be kept in an institution. Rosner(7), Schilder(8), and Brody and Freed (9) have reported compulsive phenomena accompanying Parkinson's disease. Jelliffe (10) described several cases of this type and discussed their psychopathology.

This report deals with some specific psychiatric symptoms and syndromes that have been encountered in the last 5 years in detailed study of some 200 patients with this disease in both clinic and private practice. Four main groups of psychiatric syndromes and symptoms seen in patients with Parkinson's disease can be listed: (1) psychiatric diseases unrelated to Parkinsonism, (2) reactive mental disturbances, (3) psychiatric symptoms caused by medication, and (4) paroxysmal psychiatric disorders probably related to Parkinson's disease.

Group 1. Patients with Unrelated Psychiatric Disease.—For example, manic-depressive psychosis may antedate the development of Parkinson's disease and exist along with it.

A 57-year-old male first noted the onset of a left-sided tremor 4 years before. The tremor soon involved the left leg and was associated with stiffness and loss of speed in voluntary movements. There was considerable difficulty in walking because of the involvement of the leg. A year later the condition spread to the other side. Past history revealed that this patient had a severe depression in his middle teens causing him to leave school. At that time he was under the care of a psychiatrist. Between the ages of 25 and 30 years he had a series of depressions with some episodes of elation that interfered with his work but did not demand hospitalization. During the next 10 years he had a number of mild depressions. In his middle forties

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he was so ill with a chronic depression that he was admitted to a state hospital for a period of one year, where he was given electroshock treatment and was greatly improved. There was no history of influenza or encephalitis in this man's case.

During the year following the onset of his Parkinson's disease he developed a severe enough depression to cause him to re-enter the state hospital, and a second series of electroshock treatments was given. Very little improvement occurred but he was discharged at the end of 6 months. This depression gradually improved during the next 2 years.

During the period of Parkinson's disease the occurrence of symptoms associated with the manic-depressive illness might be more severe with the additional stress of a chronic disorder, but they are not related etiologically in any manner. It is very important in taking the history of a patient with Parkinson's disease who shows psychiatric symptoms to determine whether the symptoms existed prior to the onset of the extrapyramidal disease. Unrelated disorders of the type described above are undoubtedly altered by the additional stress of the chronic disorder, but have no other etiologic relationship.

Group 2. Patients with Reactive Mental Disturbances.—This group of patients develop their psychiatric symptoms as a result of the emotional stress of the presence of Parkinson's disease. These people are usually vulnerable individuals who react to any life stress with serious alterations in their mood. If all is going well in their lives they show few, if any, psychiatric symptoms, but they tend to become ill with a variety of psychiatric complaints when the burden in their lives becomes too severe. It is usual to call their symptoms "reactive" and depression is the most common symptom.

This reaction is found in other chronic diseases in such individuals. For example, patients who have multiple sclerosis, heart disease, arthritis, etc., show these symptoms. The psychiatric symptoms that we have seen in this group consist largely of depression, excessive worry, tension states, preoccupation with their symptoms, many somatic complaints, difficulty in sleeping, irritability, etc. In such a setting it is natural for mild organic complaints to be exaggerated, and such patients who have Parkinson's disease always present a far gloomier view of their disability than is justified. An example of such a patient is as follows:

A 63-year-old widow developed a stiffness in both legs 6 years previously with loss of associated movements in the arms and a generalized slowing of the voluntary activity. She complained of a good deal of stiffness in her shoulders and back and for over a year she was treated as a chronic arthritic. During the latter part of that year she became very depressed and lost interest in her family and friends. She spent most of her time at home. A little later her condition was diagnosed as Parkinson's disease after a slight tremor had developed in the right arm. She obtained little relief from belladonna drugs, and continued to be miserable and incapacitated in spite of therapy. Two years later when her condition was about the same she was put on Panparnit with marked improvement in the rigidity, partial relief of the slowness in movement, and disappearance of the pain. There was marked improvement in her mood and for a period of about 18 months she was able to get around and was in an excellent state of mind. During the last 6 months the depression has recurred. She has been lonely and inactive. She complains excessively of many somatic symptoms. The patient's history revealed that this woman had been free of depressions, mental illness, or symptoms until about the age of 52 when her husband died, leaving her alone in a small apartment. Her daughters had married and moved elsewhere. For a period of a year and a half she suffered from a depression and a change in personality that kept her indoors and out of touch with both relatives and friends. She eventually recovered from this grief reaction and was adjusted reasonably well when the symptoms of Parkinson's disease developed. In this case it seems quite obvious that the reactive depression would have occurred with any type of chronic illness.

Group 3. Psychiatric Symptoms Due to Medication.—It is well known that the older drugs used in the treatment of Parkinson's disease, *i.e.*, hyoscine, tincture of belladonna, and stramonium, can produce acute confusional states. The older the patient the more likely this is to occur. Sometimes it occurs with the initial use of these drugs and in other situations it occurs when the usual dosage is increased. It is necessary for the clinician to be constantly on the alert for this complication.

The symptoms include delirium in addition to mydriasis, flushing, anhidrosis, and occasionally constipation and urinary retention. They usually clear up within 48 hours after withdrawal of the drug. The newer drugs such as Artane, Panparnit, and the antihistamines may also produce deliroid states.

A 62-year-old housewife who had a slowly progressive, generalized Parkinson's tremor with rigidity, of 5 years' duration, was placed on tincture of stramonium, 15 drops 4 times a day. Four days later her husband telephoned to state that "she was out of her mind—talking irrationally and was uncooperative." He discovered her walking on the street on a cold winter evening, with one stocking off, and without shoes. She failed to recognize him and resented his efforts to get her back into the house. Examination showed dilated pupils, flushed dry skin, dysarthria, and ataxia. Her symptoms cleared up entirely within 48 hours after withdrawal of the medication.

Group 4. Paroxysmal Psychiatric Disorders Probably Related to Parkinson's Disease.—The main characteristic of this interesting group of cases is the paroxysmal nature of the complaints and their bizarre distribution. For the most part these paroxysmal disorders are associated with oculogyric crises. In the majority of oculogyric disturbances the eyes are turned up, but infrequently the eyes may be turned to the left or to the right and in rare instances they may be fixed in a forward gaze. In one case the eyes were held tightly closed and when the lids were lifted the eyes were found to be turned in upward gaze. In general, the symptoms described in this fourth group are more pronounced on the side of the patient where the Parkinson's disease is most severe. Our interest in this group of disorders arises from the possibility of their being related to specific disease processes in the deeper structures of the brain. These paroxysmal phenomena, the mental symptoms of which may be very severe, are deserving of wider study. The various types of paroxysmal syndromes are listed with illustrative case histories.

A. *Anxiety Attacks.*—These anxiety attacks are paroxysmal in character and usually associated with other paroxysmal symptoms. In many patients they are associated with oculogyric crises often of extremely short duration and lasting only minutes. They are sometimes associated with a fast pulse, sweating, alterations in respiration, and changes in the vasomotor tone so that the skin may be either red or white. In other cases the attacks may last as long as an hour or more. In such patients a careful history does not reveal in the patient any evidence of previous anxiety attacks that one would associate with anxiety neurosis. Furthermore these attacks often disappear if the medication is effective in the relief of the Parkinson's symptoms. The intensity of the attacks is unusual when compared to the ordinary attacks of anxiety seen in neurosis. The patients in some instances state that they are seized with abject terror of a sort they have never experienced before. When the attack ends all feeling of anxiety disappears. In dealing with this symptom we have been careful not to confuse it with the ordinary anxiety feelings or even anxiety attacks from which patients with neuroses suffer. An example of this type of case follows:

A 47-year-old female developed a stiffness and slowness in the right arm and leg 3 years before with very little evidence of tremor. Her past history revealed that she was an overconscientious, serious person who took great pride in the perfection of whatever she did. She was quite ambitious in both her social and domestic endeavors. However, she had no history of any mental disorder. She had enjoyed sound health until the onset of the Parkinson's disease with the exception of a severe influenza in 1918. During the past 2 years she had noted periodic attacks in which her eyes rolled up and tended to pull to the right. These attacks lasted from 20 to 30 minutes. Treatment with Benadryl and Diparcol alleviated the stiffness and lessened the frequency and severity of the attacks. In the past 6 months when these attacks occur they are associated with an intense feeling of anxiety and terror which the patient is incapable of describing. She says that the onset is sudden, producing a feeling of impending death or the arrival of some terrific catastrophe. She is conscious of her heart beating fast, also the movements in the eyes, and she waits in terror for something horrible to happen. It is always a surprise to her when the attack disappears without any eventful occurrence. During the Christmas vacation when the patient was socially overburdened, she had an increase in the attacks without accompanying eye movements. Recently this patient has improved following a change in her medication and an explanation of the nature of her attacks. She received marked reassurance from the knowledge that the paroxysmal attacks were a part of her Parkinsonian disorder. She has been free of attacks for the past 2 months.

B. *Specific Attacks of Compulsive Thinking, Counting, and Use of Words.*—In this group of patients a previous history of obsession may be entirely absent, but sometimes they may show mild compulsive traits. These patients find that they have a sudden compulsion to repeat numbers or words. The more they try to dismiss this pattern, the more severe the compulsive thinking be-

comes. Very often during such attacks of compulsive thinking some anxiety develops. The attacks may be so short that they disappear in minutes, but in other cases they may last for an hour or more. During the period between the attacks, the compulsive phenomena are absent. This type of symptom also seems to disappear in patients who are successfully helped by medication.

A 35-year-old female with postencephalitic Parkinson's disease of 4 years' duration has very frequent attacks of oculogyric crises. During these attacks the date, "September 2, 1950," keeps coming up over and over again. The pattern is so regular that both she and her physician are tantalized by what will occur when this day comes around. During this actual crisis, which lasts one-half hour, the patient is miserable with this obsessive, forced thinking, and is only curious and amused by it during the intervals between the attacks.

Another good example is shown in a man of 35 years of age, an able accountant, who has always been excessively neat. He developed Parkinson's disease 6 years ago. He has paroxysmal attacks of anxiety with an increase in his tremor during which he has to count numbers, usually under 20, over and over again. It is interesting to note that as far as could be determined during an interview when he had one of these attacks the rate of counting was synchronous with his 4 per second tremor. The combination of anxiety, forced counting, and increase in the tremor was intolerable and this patient would submit to any procedure for relief. Fortunately, he responded well to a mixture of Panparnit and Benadryl, with an almost complete disappearance of his paroxysmal attacks.

Another patient of this type, a clerk about 35 years old, had crises of some 15 minutes' duration during which the forced thinking contained only this phrase, "1,2,3,4,5,6, 6,5,4,3,2,1, 1,2,3,4,5,6, 6,5, 4,3,2,1." This relatively monotonous repetitive mental counting was not associated with any alteration of emotional tone. The patient regarded the forced thought during these crises as being silly and inconsequential.

A 53-year-old woman had encephalitis at the age of 33. Shortly thereafter she found that she was slowing down and putting on weight. Her Parkinson's disease gradually increased in severity until she now had bilateral tremor and rigidity of moderate degree. For some years she has had a difficulty with her speech. This consists of the forced repetition of the last 2 or 4 words of a sentence sometimes as often as 15 or 20 times, and she is quite unable to stop herself. The symptom is worse when she is excited or anxious. There has been some improvement with medication. She does not appear to have any other compulsive phenomena.

C. *Paroxysmal Depression.*—In this situation a sudden profound depression occurs paroxysmally, and is often associated with oculogyric crises. The onset is explosive and usually of short duration. A patient who is otherwise normal might suddenly develop one of these paroxysmal depressions to such a degree that he wishes to commit suicide at once. The depression may last only a few minutes, or sometimes as long as an hour. After it disappears the patient's mood is quite normal until the next attack.

A 53-year-old woman had Parkinson's disease of about 8 years' duration. Her past history was negative for any mental or psychic illness. During the fifth year of the disease she developed paroxysmal attacks of depression. Her stiffness, weakness, and tremor involved the right side of the body, particularly the leg and arm. She also has oculogyric crises at rare intervals. Her attacks of depression are associated with increase in the weakness of her right hand and leg and a total inability to initiate movement immediately. It requires 30-40 seconds for her to get out of a chair. When one of these attacks occurs she states that she is seized with a hopeless gloom so deep that death seems inevitable and welcome. Suicidal thoughts occur, but she is so incapacitated by this paroxysm that nothing can be done. The attacks usually last 5-10 minutes, but sometimes as long as one-half hour. The patient has greatly improved with small amounts of Panparnit and Thephorin but still has occasional attacks.

A suicide has occurred in one of our patients, a divorced housewife, who had a mild, acute encephalitis in 1918. She developed Parkinsonian rigidity in 1932. At that time oculogyric crises began to occur at 10- to 14-day intervals. During these crises the eyelids were held tightly shut and when they were forced open the eyeballs were found to be in a position of upward gaze. The crises were characterized by the constant thought of indescribable calamity, with a feeling that the world was going to end, that her parents, friends, and in fact, the entire human race were undergoing indescribable torture. During the crises the patient screamed and wailed so intensely that neighbors estimated she could be heard for 3 city blocks. Sodium amytal in doses of 18-27 grains were required to terminate these attacks. A long and serious attempt was made to treat this girl by psychoanalysis to no avail. She was committed to a state hospital where she received benefit from Vinobel and was discharged. The crises recurred and a leukotomy was performed with benefit for one year. After this time the crises recurred once more and in 1945 she ingested 80 capsules of sodium amytal (240 grains) and was successful in suicide. One previous attempt by the same means had been unsuccessful in 1942.

Another bizarre variation of paroxysmal depression has appeared in a 43-year-old woman who has had a slightly progressive Parkinson rigidity for the past 13 years. The crises associated with oculo-

gyria appear once or twice a week and last approximately one hour. During the paroxysm she has forced thinking, feeling very sorry for her father, her husband, and all people close to her. This thought elaborates itself into feeling sorry for how hard they have to work, how heavy their burdens are, and how little pleasure they get out of life. This feeling of worry for others becomes so intense that it produces a feeling of bodily ache in the patient and she weeps softly during the entire crisis. Strangely enough she has no worry for herself during these episodes.

D. *Paranoid Attacks.*—Paroxysmal attacks of the paranoid type with ideas of reference and hostility toward the environment have been encountered. Some of these paroxysmal paranoid episodes are localized to one side of the body so that in one patient, during crises associated with this disease, everything and everybody on the left side of the body was hostile and unfriendly, whereas the environment on the right side was normal and friendly. With the cessation of the attack the thinking would return to normal.

A 43-year-old man gave no history of encephalitis but began to have what he calls "blue spells" at the age of 28. About the same time he started having oculogyric crises. These have gradually increased in severity and number until the present time. On examination he has lost the power of convergence, he has a rhythmic tremor of his tongue, and he has a very slight tremor, but no appreciable rigidity, of his arms. The "blue spells" are usually, but not always, precipitated by an oculogyric crisis. They usually last 1 or 2 days. During an attack he is moody, irritable, hostile, thinks people are talking about him, and refuses to go to work. On one occasion he stole a handbag. On another he tried to lure a young girl into a wood, was caught, and was sentenced to six months' imprisonment. Between attacks he is perfectly rational and has normal affect. The frequency of his attacks has been lessened with medication.

A 38-year-old male with postencephalitic Parkinson's disease had oculogyric crises as often as 2 or 3 times a week. During these crises his eyes turn to the left, and, if anybody is nearby in that half of his field of vision, there is a tendency for his gaze to be fixed on that person. Then "I become extremely conscious of that person. Something seems to permeate the atmosphere as both he and I feel uncomfortable." The attacks last about 15 minutes. If he is in a crowd when the attack comes on he feels that—"I am the object of all eyes, the same feeling a person might have who was evading the police." The presence of a stranger on his left hand side "distracts my thought and gaze with the same troublesome shift in my eyes. I am strangely conscious of his presence. . . . ." The patient went on to point out that he always sat down on the left side of the seat in a bus, railroad station, etc., so that nobody could be on his left side. The intensity of his distress was such that he became resentful and fearful of the whole left half of his environment. Under treatment with Vinobel the attacks decreased in intensity and in frequency.

E. *Paroxysmal Attacks of Strange Feeling in the Limbs.*—Sometimes these attacks are associated with the feeling that a deep foreign body is in the limb. More commonly there is a burning feeling in the skin, particularly of the back of the neck and the top of the head. Vague complaints of discomfort, pain, tightness, pressure, sometimes dull in character and sometimes knifelike, sharp, hot, burning, firelike, or throbbing, which spread over one side of the body or involve the affected side, are encountered. They often last a whole day but may be very much shorter.

A 61-year-old male developed Parkinson's disease 8 years before with involvement of the left extremities. Three years later his right side was involved to a lesser extent. The tremor was marked but was not very disturbing. The patient had a history of influenza in 1919. For the past 2 years the patient has been taking Panparnit with relief of both the tremor and rigidity. Six months ago he began to complain of an intense burning pain in his involved left arm which radiated down to his fingers. At the same time he had a feeling of localized heat so that he would ask his wife to feel if he had a fever in this area. There was no objective difference of temperature in the 2 limbs but the feeling of burning was very specific. The pain and the burning in the left hand often lasted for as long as 12 hours and sometimes would only partially disappear, then recur again the following day. Other times it would be absent for several days only to return again suddenly and intensely. He did not seem to respond to any of the various medications. At the same time he also complained of a sensation of heat and burning, but not pain, on the top of his head with some radiation to the left side. The weight of covers or clothes and the act of washing his hands intensified this symptom. At the time of examination there was no sensory loss of any kind, no objective difference of appearance of the limbs, and no orthopedic or vascular lesion of a local nature was found. He did have a mild hypertension that had been present for several years. Physiotherapy, particularly massage and local heat, which bothered him at the time, caused a definite remission of symptoms for several hours. Rest in bed, sedation, and physiotherapy for a week reduced the symptoms considerably and they now occur at less frequent intervals.

It is our opinion that this type of sensory complaint of pain or heat is similar to the

symptoms in known lesions of the thalamus. It is felt that this is the site of the origin of these attacks.

F. *Schizoid Reactions.*—A number of patients have been encountered with feelings of unreality, and partial depersonalization. One patient, during an attack of this sort, felt that he had aged some 90 years since the experience had begun and that this was the way he would feel after this period of time had elapsed. He described this as a strange and horrible feeling of unreality. At the same time he complained of the often concomitant rolling up of his eyes and a strong feeling of being unable to move.

G. *States of Severe Agitation and Tension.*—States of agitation and tension so severe that the subject is constantly getting up and down in a chair and is completely unable to find and maintain any position of comfort have also been encountered. The patient walks restlessly about the room and feels frustrated, anxious, and tense. He is hypercritical and overcomplaining. Such states resemble the neurotic tension state in appearance to such a degree that these patients are often described as having an acute and severe neurosis in the presence of an *unimportant* Parkinson syndrome.

A 73-year-old male with Parkinson's disease of 5 years' duration involving both arms with tremor and rigidity, began to complain of severe paroxysmal attacks of tremor, agitation, and tension that would wake him up at night. He would find himself shaking in bed and so agitated that he would have to get up and walk about the room. He was under extreme tension during these attacks although there was little actual anxiety. These episodes were best described as paroxysmal tremors with tension and agitation; there was no depression. They would last from one-half hour to an hour then gradually subside so that the patient could go back to bed. By using chloral hydrate it was possible to bring them to a termination in 15-20 minutes so that he could go to sleep. For awhile they occurred nearly every night and then gradually lessened in severity and frequency until now they occur about once or twice a week.

H. *Chronic Fatigue States.*—These are very often seen in Parkinson's disease of various types. The usual explanation in textbooks has been that the tremor and rigidity by their exhaustion of the muscle produces the state of fatigue, and it is of no consequence as a separate entity. However, the degree of fatigue is not proportional to the severity of the tremor or the amount of rigidity. In patients with only a little loss of associated movement and slowing of motion, the complaint of fatigue may be maximal and the effect debilitative. Our studies in the syndrome of fatigue in this disease have shown that the muscle performance is perfectly adequate and that the lactic acid production is slightly increased as in neurotic fatigue.

A patient described under *C* also showed during her paroxysmal attacks extraordinary fatigue so that she was unable to make more than one movement of her hand without exhausting her strength. This fatigue was associated with marked subjective weakness of all her muscles. It was particularly noticeable in her ability to eat. During one of these attacks, if it occurred in a public restaurant, she could, for example, only swallow once of a liquid, or chew food once or twice without the fatigue becoming so marked that she could not continue eating.

Personality Groupings

We have divided our patients arbitrarily into 3 personality groups that we found useful in assessing the effects of treatment in this condition and the effects of stress on the disease itself (11):

Group A.—Patients whose lives are relatively simple, whose adjustments have been on a healthy, normal level and in whom no strong conflicts or notable deviations from the average can be detected. They are the easy-going, adaptable, sturdy people who take the world as they find it. They have a calm, phlegmatic, realistic attitude toward life and appear resilient to its flows. We have labeled these a placid type of normal personality.

Group B.—These patients are more sensitive, vulnerable, and suggestible than those in Group A. They are easily upset, submissive, and dependent. These traits, which might be considered neurotic by some, are not excessive enough to enable a psychiatric diagnosis to be made. Such patients readily fall into any therapeutic régime and would cooperate enthusiastically with any instruction that the physician might prescribe.

Group C.—The characteristic of patients in this group is that they set unusually high standards for themselves in one way or another. It includes the assertive, attention-getting, determined, driving, ambitious people who have lofty goals of conduct and

achievement and who have a low tolerance of frustration and disappointment. On the other hand this group also included all suspicious, worrying, demanding, tense people who are often overconcerned with their health. They tend to be obsessive and perfectionistic and they all demand from life, their family, and their physician far more than is obtainable.

The patients in the above 3 groups are all, from the psychiatric point of view, initially essentially normal although some of them, especially in the *C* group, may suffer from a reactive depression to the disease.

We have found that psychiatric symptoms are rare in our Type A patients while they are present in about half of the *B* and *C* group.

COMMENT

Since the pathology in Parkinson's disease is extremely variable and widespread involving the basal ganglia and such structures as the mesencephalon, thalamus, hypothalamus, and even the cortex and subcortical areas of the temporal and frontal lobes, it is not surprising that many psychiatric syndromes should be encountered. The physiologic evidence concerning the origin of emotion in man(12) indicates that many of the structures involved are those that are damaged in Parkinson's disease. Therefore we have an opportunity in the study of these patients with known neurological disease to correlate specific brain lesions with numerous psychiatric symptoms. The psychiatric aspects of Parkinson's disease not only comprise a rare assortment of phenomena to which the clinician must be alert, but they open an avenue for the investigator to explore the neural correlates of many types of mental disease.

SUMMARY

1. The psychiatric symptoms and syndromes associated with Parkinson's disease are of 4 general types: (1) psychiatric diseases unrelated to Parkinsonism, (2) reactive mental disturbances, (3) psychiatric symptoms caused by medication, and (4) paroxysmal psychiatric disorders probably related to Parkinson's disease.

2. Examples of the 4 types are described in a series of more than 200 patients with the disease.

3. The paroxysmal psychiatric disorders usually associated with oculogyric crises (Type 4) are of special interest in that they often comprise *formes frustres* of psychoses and neuroses, and afford an opportunity for study of the neural correlates of many types of mental disorders.

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ELECTROMYOGRAPHIC RECORDING DURING INTERVIEW[1]

FREDERICK H. DAVIS, M.D., AND ROBERT B. MALMO, PH.D.
Montreal, Canada

One of the most significant recent developments in the field of psychosomatics is the increased attention to the physiological mechanisms of symptom formation in such studies as those of Wolff and his co-workers(19). These studies aim at objective statements of physiological change as a function of stress.

In most studies attention was focused on certain individual cases and on some particular physiological function. Among the physiological variables covered are the following: skeletal muscle contraction in headache(20); skin temperature(11); vesical function (cystometry)(14); gastric function(18); colonic function(1-3, 5); elaboration of lysozyme(5); alterations in nasal functions (6); and cardiovascular function(4, 12, 13, 16, 17).

The methods of assessing the functional relationship between stress and physiological reaction have varied. In some studies the stress of the interview situation as a whole was utilized to demonstrate accompanying physiological reactions(11, 16, 17). In other studies, altered physiological reaction within a single interview was found to be related to changes in the subject's emotional state (*e.g.*, in response to shifting the topic in interview from a neutral to a sensitive one). The influence of changes in the life situation upon physiological function has also been assessed in investigations employing the method of longitudinal case study(4, 13, 16, 17).

Although electromyography has been employed in the study of tensional headaches (9, 20), investigation of muscular tension has not proceeded as far as has work along other lines, as for example, cardiovascular studies. Electromyographic study of muscular tension appears promising not only in adding to our knowledge of headache mechanisms, but also in throwing light on other tensional symptoms found so frequently in psychoneurotic disorders(8). Within normal limits, degree of muscular tension may also be correlated with attitude toward the task in hand(7). It may be anticipated, therefore, that EMG recording during psychiatric interview might reveal something about the way the patient is working in psychotherapy.

The purpose of the present study was to explore the possibilities of EMG recording during psychiatric interview. The experimental design provided for extremely close synchronization between interview content (sound-recorder) and EMG tracing, so that in hearing a play-back of the interview one could tell at all times exactly what degree of tension had been associated with each spoken word. As far as we are aware, this degree of synchronization between interview content and physiological reaction had not been previously achieved.

METHODS

Psychiatric interviews were conducted with the patient lying on a bed in the experimental room.

The sound record was synchronized with the electromyographic tracing in 2 ways. First, an interval timer was used in conjunction with an audio oscillator and marking pen, to provide, simultaneously, a brief tone on the magnetic tape and a pen deflection on the EMG record. The tone was not audible during interview. Secondly, outputs of 2 throat microphones (one worn by the therapist and one by the patient) were fed into 2 channels of the EMG. These provided visual indication on the record paper of the onset, duration, and cessation of all speech.

For all except neck leads (which were

[1] Read at the 106th annual meeting of The American Psychiatric Association, Detroit, Mich., May 1-5, 1950.

From the Allan Memorial Institute of Psychiatry, McGill University, Montreal, Canada.

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metal), very light sponge rubber electrodes were used.

Results

Case 1.—A. H.[2] was a 45-year-old spinster typist diagnosed as suffering from a severe chronic anxiety state, the first symptoms of which appeared at 15 years of age. Strong feelings of inadequacy, insecurity, and hostility directed mainly toward male figures developed in childhood. Later she had attempted to handle her basic needs by repression and at the time of her admission to hospital she was an extremely tense, rigid, insecure, disarticulated personality. She experienced severe overt feelings of anxiety and inadequacy in relation to her inability to communicate with people.

Four months prior to admission her symptoms showed marked intensification and after a negative investigation on the medical ward she was admitted to the psychiatric ward, complaining of very severe headaches, usually band-like in nature, which occurred in relation to stress of any sort. Dizziness, light-headedness, extreme fatigability, loss of appetite and loss of weight were also complaints. Frequent blushing, sweatiness of the hands, and palpitations were also common occurrences at work. Her motivation to work in psychotherapy was not good.

Among the EMG recordings were leads on the right forehead and from the extensor surface of the right forearm.

This patient was seen in 12 psychotherapeutic interviews, of which 3 were specially conducted.

In Fig. 1 a minute-by-minute plot of forehead tension throughout interviews is shown. Each point is the average of 3 values obtained in 3 standard interviews. Data from the specially conducted interviews were omitted. The virtual absence of overlap from one curve to the next indicates the strong consistency of the downward trend throughout the course of interviews. This decline in tension was attributed to a combination of factors, the most important being the patient's good response to insulin therapy, and her realization that she could effectively combat the threat of the interviews. Correlation of high-level sustained frontalis contraction with complaint of headache was obtained.

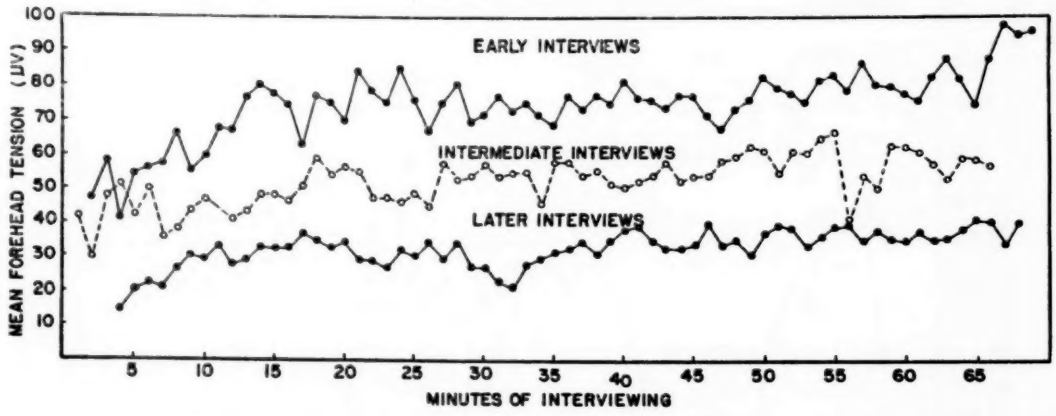

Fig. 1.—Case A. H. Averaged minute-to-minute plots of muscle potentials in microvolts from right frontalis during 9 standard interviews. Each point based on average of 3 values. Early interviews, 1, 3, and 4; intermediate interviews, 5, 6, and 8; later interviews, 9, 11, and 12.

A. H.'s complaints of headache occurred principally during the second halves of the early interviews when tension was highest and when minute-to-minute fluctuations were small. This rise in tension within the interview is also shown in this figure. Statistical analysis revealed a highly significant difference between the halves.

Of the interviews that were specially conducted, interview 7, shown here in Fig. 2, is the most revealing. In contrast to previous interviews, number 7 was structured so as to leave the patient entirely on her own initiative for the production of material to be discussed. The conversation during the first 5 minutes of the interview, noted on the plot of talking, dealt entirely with the therapist's delineation of the manner in which this interview was to be conducted. During the next 5 minutes the patient was able to say

[2] Further details concerning this case will be presented elsewhere (10).

little, as indicated in the figure. In this early part of the interview the forehead potentials showed steady rise. As the potentials were reaching a peak (about 8½ minutes of interview) the patient spontaneously complained of headache. When the patient resolved the stress of this situation by commencing to talk about superficialities that she had discussed dent in the graph, represents a general trend, which, however, was not invariable. Bearing in mind the patient's difficulties in communication and her feelings of anxiety and inadequacy associated with the necessity of making conversation, this interview is considered significant and has an obvious relationship to the next finding.

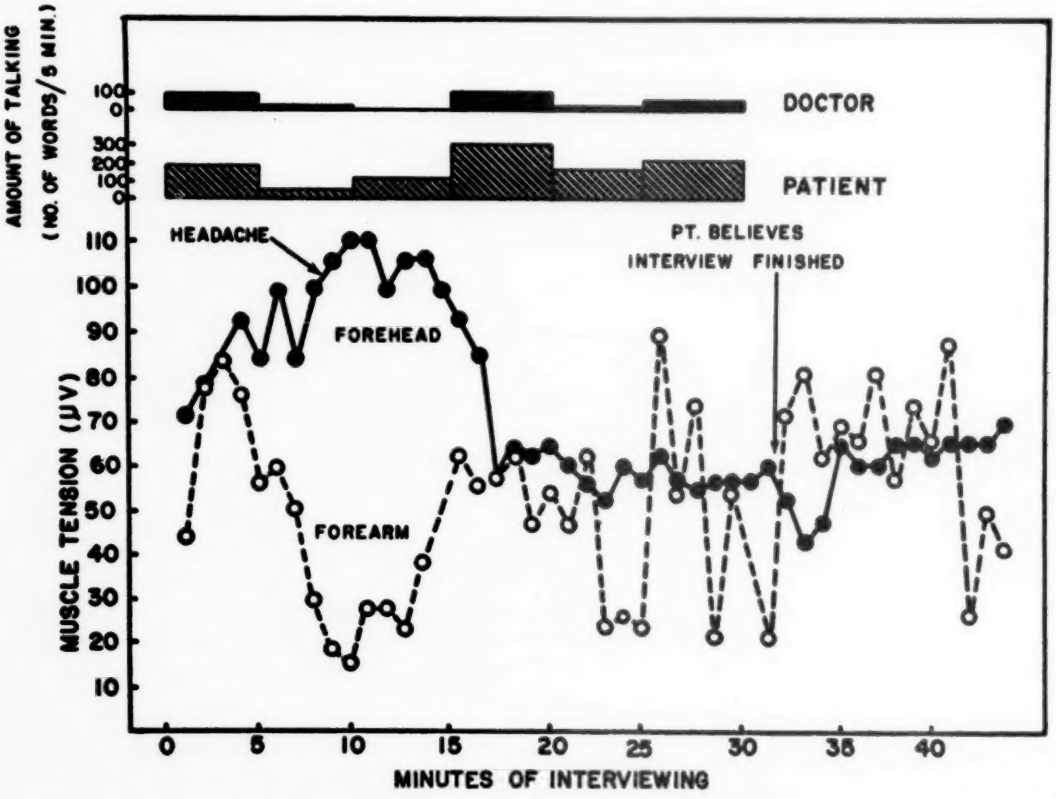

FIG. 2.—Case A. H. Minute-to-minute plots of muscle potentials in microvolts from right frontalis and right forearm-extensor during interview 7. Bar graphs show amount of talking by doctor and patient for each 5-min. period during the 30-min. portion of interview which was recorded. Note that rise in forehead potentials is specifically associated with patient's spontaneous report of headache (see text).

previously on several occasions, the therapist felt that nothing would be gained by attemping to pursue this course and he resumed his usual role. Forehead potentials then showed fast decline until a level roughly half that of peak was reached. Evidence for specificity of frontalis activity in the headache may be noted in that changes in arm potentials were not positively correlated with degree of stress and subjective complaint of headache. The reciprocal relationship between forehead tension and arm tension, so conspicuously evi-

In 77% of all instances, talking was accompanied by a fall in forehead tension. This phenomenon was completely eliminated by the administration of 5 grains of amytal intravenously. Fig. 3 shows a typical record of this phenomenon, and demonstrates how, following talking, there was an immediate return of the forehead to a higher level of tension, which was then constantly sustained during the silent period. Fall in tension usually occurred immediately when talking commenced. This fall in forehead tension with

talking is a most unusual phenomenon. In most people (including Case 2 in the present study) the opposite effect, that is, an increase of tension with talking, is usually produced. In only 7 of the 465 instances scored for A. H. was there an increase of forehead tension when talking.

We have interpreted this unusual phenomenon in A. H. to mean high sensitization of frontalis muscle to stress. The stress here is related to the matter of interpersonal communication. Silence was stressful because it signified a failure on her part to do what the therapist wanted her to do. Talking represented an immediate diminution of stress, which showed itself in reduced forehead potentials.

Considering all the data in the case, we may conclude that the physiological recordings during interview have provided a number of significant correlations. In particular: (1) the interrelationship between the patient's headaches and anxiety- or tension-producing situations has been clearly demonstrated. (2) Favorable response to insulin therapy, in terms of relief from headaches, which was nearly complete at the time of discharge, was correlated with the progressive reduction in frontalis muscle potentials. (3) It has been clearly demonstrated how tension-producing was *silence* in this patient-therapist relationship.

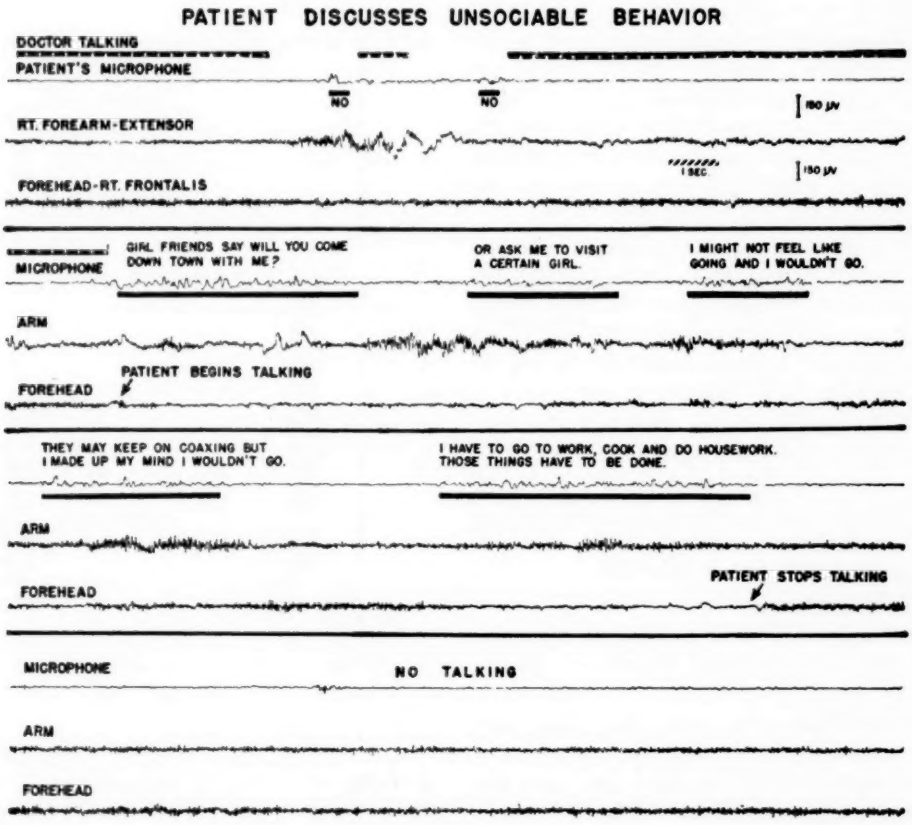

FIG. 3.—Case A. H. Section of continuous strip of record. Note fall in level of forehead tension when patient starts talking and immediate rise when she stops, followed by sustained high level tension when both patient and doctor are silent (see text).

CASE 2.—E. B. was a 27-year-old housewife, diagnosed as a very severe anxiety-hysteric with phobias. On admission, the patient's complaints were, first, those of generalized anxiety. Secondly she showed phobias of killing or injuring her children, harming herself or her husband, knives or any sharp instruments, and becoming insane. Somatic complaints included severe headaches, pains in the neck, pains in the chest, crampy abdominal pains,

dizzy spells, tingling in the legs, and numerous others.

Her personality displayed many hysterical features, showing impulsiveness, extreme emotional lability and dependency; she also tended to be manipulative, egocentric, and histrionic. However, she had always been able to relate well on a superficial basis.

On admission the patient was placed on mild sedation, and in the fourth week started on a course of somnolent insulin. During the 8 weeks of hospitalization 25 psychotherapeutic sessions were conducted under the special recording conditions, previously described. In this case EMG's were recorded from leads placed on the frontalis muscle, the extensor muscles of the neck, and the peroneals of the right leg.

At the time of discharge the patient had shown improvement, in an increased willingness to accept responsibility for herself and in an increased acceptance of herself. This expressed itself by the abandonment of her belief that all her difficulties were due to organic disease processes. She was more accepting of anxiety-producing situations and less disturbed by phobias. Improvement was not nearly so much a case of single tension reduction as in the case of A. H.

Therefore, it is of considerable interest to find that progressive reduction in tension level through the course of interviews, which was such a conspicuous feature in A. H., was not noted in this case. Among other significant differences were the following: (1) that average level of tension was decidedly higher in A. H. and (2) that the tension in A. H. was of a much steadier kind than that in E. B., who during interviews regularly showed many abrupt changes in forehead tension. Statistical analysis applied to both aspects of tension measurement (level and change) established the reliability of these differences.

Progress in psychotherapy varied greatly from interview to interview. In some she worked well; in others she did not, and *these* interviews were essentially nonproductive.

In Fig. 4 is shown a graphic comparison of mean muscle tension (from forehead and neck) between the 3 most productive and the 3 least productive interviews. Each bar represents the average of 3 interviews. It is to be noted that, in those interviews when the patient was working productively, forehead and neck tension was significantly higher than it was in the nonproductive interviews.

The following were the criteria used in classifying the interviews. In the interviews classed as productive the patient accepted the fact that her difficulties were of a psychogenic nature and she honestly attempted to explore her emotional feelings and to understand her reactions. Insights gained during interviews of this type were meaningful to the patient and subsequently effected changes in her thinking and feeling with reference to the area in which the insight had been gained. She appeared to be warm and friendly toward the examiner and her attitude reflected recognition of progress and the relation of this to the interpersonal communication between herself and the therapist.

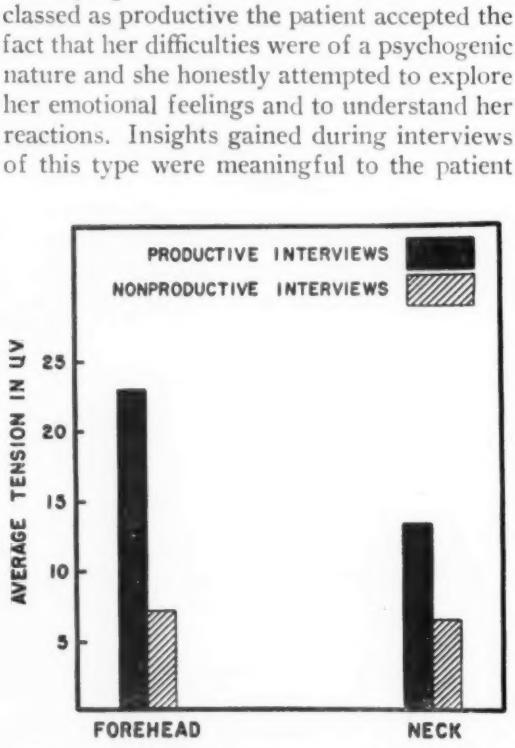

FIG. 4.—Case E. B. Bar graphs representing average forehead and neck tension of the 3 most productive and the 3 least productive interviews.

In the interviews classed as nonproductive, on the other hand, the patient expressed numerous somatic complaints and ascribed all her problems to a basis in organic illness. During these interviews she did not work in psychotherapy and when important topics were introduced she resorted to various means of escape such as breaking off discussion, or expressing a complete loss of memory for what had been said during the previous interview. During this type of in-

terview, E. B. evidenced both unconscious hostility toward the examiner and greater dependency on him.

The finding of the marked difference between levels of tension is surprising in that it is the reverse of what might have been predicted from the patient's reaction. During the productive interviews the patient seemed calm, reasonable, quiet, forward-looking and fairly sure of herself. In the nonproductive ones her thinking was disorganized, she was hostile and confused, and appeared irritable and disturbed.

hostility. The first arrow indicates the low level to which tension fell when she recalled expressing the wish that her mother-in-law would die. At (2), after a brief pause she raised the question of how she would handle the home situation. Note the large increase in tension associated with the expression of this thought. All other large tensional rises during this interview were directly related to the patient's consideration of anxiety-producing situations. At (3) she introduced her fears of injuring others or herself and at (4) she expressed her fears of insanity. At (5)

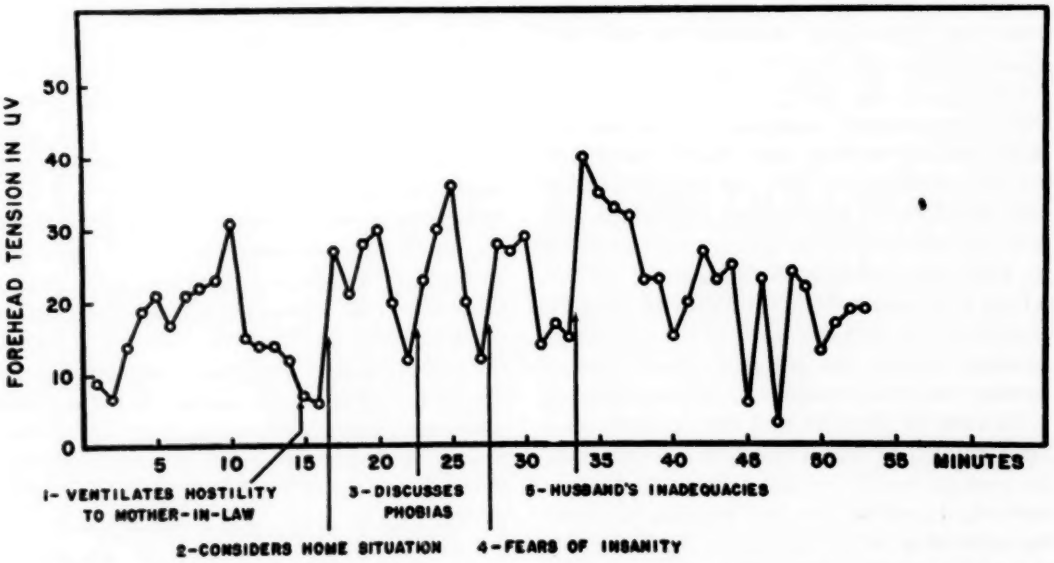

FIG. 5.—Case E. B. Minute-to-minute plot of forehead tension in interview 19, one of E. B.'s most productive interviews. Each of the sudden rises in level of tension occurred when the patient discussed a stressful life situation.

During the productive interviews there was an association of specific content with tensional phenomena. This was *not* seen in the nonproductive interviews. Interview 19 was one of the most productive interviews, and in Fig. 5 is presented a minute-to-minute plot of forehead tension during this interview showing the association between tensional levels and anxiety-producing content. The patient began the interview without direction and at the 10-minute mark, where the first peak is located, she stated how "self-conscious" she was in certain social situations, but felt that she should continue to expose herself to these situations and "fight" these feelings. Shortly thereafter, she discussed her mother-in-law, for whom she had great

she discussed her husband's inadequacies and his inability to give her the support she wished.

It is important to note that the patient's greater tolerance for anxiety (compared with *lower* tolerance in the nonproductive interview) is associated with increased muscular tension, which in the absence of the physiological record could not have been observed. Likewise in the case of A. H. the phenomena associated with talking and with somatization could not have been detected in any other way.

DISCUSSION

The usefulness of this method is felt to have been established. In instances such as

A. H. where skeletal muscle tension appears to be in very intimate relationship with anxiety this technique is able to give an objective measurement of tension for every second of an interview and to record the changes in levels of tension caused by every remark or silence created by the patient or therapist.

The use of this method in the first case was effective in demonstrating the existence of a high level of frontalis muscle tension in a patient complaining of severe headaches at the time of admission. It demonstrated the relationship between this forehead tension and the head symptoms, and also the pattern that this tension showed during an ordinary interview. Periods of silence in the interview situation were shown to be extremely tension-producing to this patient. The method further demonstrated methods of tension release, in that talking was shown to reduce tension momentarily, and that insulin therapy was effective in eliminating symptoms and reducing tension well below the level at which it was associated with headaches. Thus, where tension can be identified with anxiety, physiological data are available to study in intimate detail the interplays of psychotherapy and the dynamics of anxiety-control.

In view of the fact that only 2 cases have been studied by this technique a direct comparison of results would appear to be premature. However, we feel justified in drawing attention to the fact that A. H. was a rigid, constricted personality type, who had had a severe anxiety state for many years. The body area involved in symptom production was limited to the head, and tensional head symptoms had followed the same pattern for 30 years. This in turn was related to a high level of tension apparently most severe in the symptom area, which remained at high levels until reduced by insulin.

On the other hand, E. B.'s personality type was impulsive, variable, and dependent, and she had had a multiplicity of symptoms usually of short duration and constantly changing pattern. This was associated with rapidly variable levels of tension in all areas recorded from, and no persistently high levels in any area.

The finding of increased tensional levels in association with E. B.'s constructive and responsible approach to her problems, and low levels of tension associated with a dependent and nonproductive attitude is unexpected from the clinical appearance that E. B. presented at these respective times.

The significance of this finding is difficult to interpret in this patient owing to the fact that the dynamics behind the difference between these attitudes are not fully understood. The correlation between increased frontalis muscle tension and meaningful consideration of anxiety-producing life situations was often demonstrated and is here illustrated by interview 19. However, this does not answer the question as to why the patient was able to consider these life situations during some interviews and not in others, nor why the patient should reveal lowered levels of tension when her thinking was confused, evasive, and disorganized and while she was complaining most bitterly about her present status (although in terms of organic disabilities). If the motivation causing this latter behavior was related to anxiety reduction then it may have been that her anxiety level was greater on these days, and that she resorted to avoidance mechanisms. In further considering the lowered tension on days when the patient was nonconstructive it must be remembered that she evidenced many somatic complaints apparently not associated with skeletal musculature. These may have functioned in the form of conversion symptoms to reduce skeletal muscle tension as we recorded it.

It is of interest to note the parallel between these findings and Whitehorn's in dealing with schizophrenic patients(15).

Summary

1. A method for electromyographic study of the interview situation has been described.

2. In the present exploratory study, the close synchronization of physiological recording with sound-tape recording of interview content, which this method provides, has been of value in a number of ways: (a) in providing objective evidence, in Case 1, of the activation of a tensional headache mechanism by psychological stress; (b) in demonstrating the specificity of this mechanism, and its alteration following treatment; and (c) in providing objective evidence of physiological

differentiation corresponding to differences in psychotherapeutic productivity in Case 2.

3. This method appears to be a promising one for use in further investigations of this kind.

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DISCUSSION

DR. SOLOMON KATZENELBOGEN (Washington, D. C.).—This study appears to me particularly worthwhile for the following reason: Clinical experience shows that patients react to emotional disorders not only with their vegetative organs but also with their motor system. The most spectacular illustration is offered, of course, by the hysterical paralysis. Less dramatic but nonetheless very significant reactions of the skeletal muscles to emotions are known to occur more frequently in patients complaining of pain in the joints, backache, pain and stiffness of the neck, pain and tension elsewhere in the locomotor system. Yet, unlike the visceral organs, the skeletal muscles have heretofore not received the attention they deserve in research psychosomatic studies.

With regard to the first patient, I should like to ask whether sodium amytal brought forward distressing material; if it did, it might plausibly explain the considerable rise of muscular tension. Then, in the subsequent decline of muscle tension, should one not consider the possible pharmacological effects of either or both, sodium amytal and insulin? Then, the interviews 7 and 10 which, as we are told, "placed greater stress on the patient," are particularly demonstrative of the correlation between emotional reaction and muscle tension.

As to the discrepancy between muscle tension in the forehead and that in the arm, one should bear in mind, as a possible explanation, the phenomenon of choice of organ, so frequently seen in psychosomatic disorders; that is, more predominant reactions of one organ or one system or organs, to emotional disorders.

The specifically intense reactions of the forehead muscles, in contrast to the less marked reactions of the arm muscles, acquire in this patient particular significance, considering that they are associated with headache. Then, I like to point out, the fall in forehead-muscles tension, while the patient is talking, would not appear peculiar, if the nature of the talking were such as to alleviate the emotional reactions; also, that silence by itself during psychotherapeutic sessions is apt to produce emotional disturbances.

Figure 4, showing high muscle tension associated with quiescence and low muscle tension with hostility and confusion, is very enlightening. It demonstrates the fact that obvious calmness may cover up a serious inner emotional turmoil; conversely, obvious emotional reactions may relieve the emotional

level sufficiently, so that relatively little emotional energy remains available for somatization.

Figure 5 is equally illuminating in that it demonstrates correlation between perturbing emotional reactions and muscle tension.

The last remark I should like to make, which seems to me pertinent to the material presented, is that the presence of somatic reactions—whether visceral or muscular—may indicate emotional disorders, both obvious and hidden ones; but the reverse is not true, *i.e.*, conspicuous absence of somatic reactions may go hand-in-hand with more or less marked emotional reactions.

I take pleasure in commending the authors for the appropriate choice of subject and for the very effective execution of the research plan.

THE HYPNOTIC AND HYPNOTHERAPEUTIC CONTROL OF SEVERE PAIN[1]

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Pain can be organically determined or psychogenically based. It may be both, and emotional and organic components may be present in varying degree. The more pronounced the emotional components, however, the more difficult it becomes to control it by the more usual medical and surgical procedures. Hypnosis is frequently effective, either by the direct suggestion of hypnotic anæsthesia or by the use of various psychotherapeutic techniques with patients under hypnosis. Intractable pain can be successfully controlled during the hypnotic session.

Some patients, suffering from chronic and long-continued pain, respond poorly to analgesics, and for others analgesics must be prescribed sparingly or alternated because tolerance may be built up or drug addiction ensue. With patients such as these, the problem is not only that of inducing anæsthesia at the time of the hypnotic session, but that of suggesting, as well, that the patient feel no pain posthypnotically. The more pronounced its organic determinants, however, the less effective has been our continuing posthypnotic control of the symptom. Conversely, pain primarily emotionally determined can be readily inhibited by posthypnotic suggestion.

Until recently, hypnotic anæsthesia had been induced for the most part by direct commands to the effect that the patient relax, sleep deeply, feel nothing, and be amnestic for the period of the delivery or operation. But only 25% of our patients—figures in the literature range from 15% to 35%—can be hypnotized deeply enough in from one to four sessions to make direct suggestions such as these clinically practicable. In some patients anæsthesia apparently cannot be so induced, although, as Erickson states, it can be hypnotically produced in practically all subjects by varying techniques in accordance with individual needs (1). On the other hand, it is relatively easy to suggest the psychological equivalent of a lobotomy. Patients are told, but in terms they understand, that no stimulus no matter how intense can possibly disturb them. Under hypnosis, they then react to pain stimuli in much the same way as patients successfully lobotomized for the control of severe, chronic and intractable pain, of which they remain aware and which they describe in the same terms as previously, but which nevertheless no longer disturbs, annoys, hurts or "pains" them.

The sensory end organs obviously continue functioning. Sensation, *pain* with its localization in a specific somatic segment and dependent as it is on intact neural pathways, is present. According to Freeman and Watts (2), prefrontal lobotomy interferes not with pain perception but with its evaluation, relieving not the pain itself but the disabling reaction to pain, apparently by eliminating emotional components that they believe arise from the thalamus. Patients in whom a "psychological lobotomy" has been induced likewise experience pain but seem unable to evaluate and integrate it into the concept of their body image. Their attitude toward pain has changed. Thresholds of tolerance, sensation, perception, ideation, and mnemic engramatization—all seem involved here.

The first of our subjects in whom a "psychological lobotomy" was induced was a 22-year-old primigravida who was delivered by this technique of a child weighing 2,545 grams. Five months previously she had been hypnotized 4 times, but although hypesthesia was attained by direct suggestion she at no time became anæsthetic. During the 4 weeks preceding delivery, she was again hypnotized 4 times, but with the following suggestions: (a) that every muscle in her body would be relaxed; (b) that no stimulus, no matter how intense, could disturb her; and (c) that during labor she would concentrate on the child. In order

[1] Read at the 106th annual meeting of The American Psychiatric Association, Detroit, Michigan, May 1-5, 1950. The author is indebted to Dr. Milton H. Erickson for his pertinent and thought-provoking criticism of some of the material incorporated in this paper.

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to determine how effective these suggestions were, it was decided to subject her to various painful stimuli. The usual tests, including the scorching of flesh by a hot flame, were thought inapplicable. Placing a tight tourniquet around her thigh in order to induce anoxemia was considered, as was the sudden blowing up of a balloon inserted in her rectum—but neither was tried. Instead, one week before delivery, painful supra-orbital pressure was applied until her pulse rate fell to 42 per minute. She was aware of this, but undisturbed by it. Since she stated that she preferred to experience and remember the delivery, posthypnotic amnesia was not suggested.

Unfortunately, immediately before delivery, her obstetrician was himself admitted to the hospital for surgery. She went into labor at 1:30 a.m., was hypnotized at 8:00 a.m., and from then on, although aware of her contractions, at no time showed clinical evidence of pain. Analgesics were not prescribed. She scarcely grunted. There had been insufficient opportunity to discuss the problems involved with the obstetrician who actually delivered her and, as a result, after the head had appeared a 1% novocaine solution was infiltrated. There was sufficient time to inject 5 cc. only and to make a 2 cm. right medio-lateral episiotomy before the infant was born. Our patient later stated that she would like to sleep for approximately 2 hours and was told that, if she wished, she need merely close her eyes. She awakened exactly 2 hours later and at that time described her sensation during delivery as "like the stretching of elastic."

It will be noted that this patient was given 3 simple suggestions under hypnosis. The first, to the effect that no stimulus could possibly disturb her, produced the "psychological lobotomy" and would, most probably, have been sufficient by itself.[2] The second, that every muscle in her body be completely relaxed, and the third, that during delivery she concentrate on the child, from one angle of approach can be considered as hypnotically induced shortcuts to the utilization of the Grantly Dick Read technique, a technique that, despite its author's belief to the contrary, makes unwitting use of light hypnosis(3).

Our second patient was a 39-year-old woman with metastases from the breast (which had been amputated 3 years previously) to the hip, who kept suffering severe pain, uncontrolled by morphine, gr. ¼ q. ½ hr. p.r.n. This was soon increased to a grain. In anticipation of the first hypnotic session, she had deliberately rejected her morphine. Under hypnosis she was told that this was unnecessary and that, instead, she could request the narcotic whenever she felt the need. The "psychological lobotomy" was successful during the course of the session, but her pain was not controlled posthypnotically. She was seen 24 times during the 6 weeks she remained alive. While hypnotized, she was relaxed and undisturbed by her pain, but posthypnotic control was unsuccessful except occasionally when deep sleep was suggested, although frequently she seemed more comfortable for a shorter or longer time after the hypnotist had left. With her, as it soon became evident, pain had been learned by experience. Emotional problems were profound. Organic pain was present and so-called psychic pain, anxiety and the dread of pain, as well.

Our analogy with a lobotomy is superficial and holds only with respect to clinically observable reactions of patients toward painful stimuli.[3] We have not been able to produce a "psychological lobotomy" posthypnotically by direct suggestion. Its effects, therefore, are much more evanescent than those of the surgical procedure.[4] However, within 5 months after the diagnosis of metastatic carcinoma had been made, this patient was dead. A prefrontal lobotomy would have been preferable to the "psychological lobotomy" from which she was able to derive only temporary relief—and nothing more.

So far as the posthypnotic control of severe, intractable chronic pain is concerned, success seems to have been reported in the literature only when emotionally based symptoms were dealt with. Dorcus and Kirkner (6), for example, treated a group of patients with severe, recurrent and persistent chronic dysmenorrhea by inducing under hypnosis what can best be characterized as a parallel experimental neurosis, which was then resolved. This consisted of hallucinated pain that was eradicated by direct suggestion and

[2] This suggestion was conceived, although it was not so suggested, during discussions about this patient with Drs. Theodore Lidz and Lewis B. Hill. The term, *psychological lobotomy*, was coined by the latter.

[3] Other just as obvious objections exist, as Lindner has stated(4), to the use of a metaphor such as this. The striking clinical resemblance, however, has led us to retain the term, in *lieu* of a better one, for the analgesia-inducing technique described above.

[4] According to Walker(5), "in approximately 20% of cases the patient [who has been lobotomized for intractable pain] . . . . remains vegetating between life and death," or "occasionally . . . . becomes frankly psychotic with severe mental confusion, hallucinations and delusions. Another one-third of the cases are not relieved of their pain or are improved only temporarily."

reinforced by the equally direct suggestion that pain arising during the waking state would disappear immediately. From their description, the conclusion seems inescapable that this pain symptomatically and to a large extent was psychogenically based. But although during hypnotic sessions they were able to inhibit paroxysmal pain in 5 of 7 veterans with spinal cord injury, posthypnotic suggestion here met with as little success as ours did, although the same experimental neurosis was induced that had had such brilliant results with their dysmenorrheic patients. Pattie(7), in a personal communication, comments on his own lack of success in attempting to alleviate the pain of a hypertensive sympathectomized patient. In our experience, the suggestion of deep sleep, or the induction even of a stupor so profound that it resembles a catatonic state, produces results at least as successful as those achieved by other means, is equivalent to the administration of an opiate and is effective for a greater or lesser period of time, varying with the individual patient. Posthypnotic trance states, according to Erickson(1), can be utilized if it be suggested that "the subject execute posthypnotic acts which cumulatively build up analgesia." But we have had only indifferent success when attempting to control severe pain, organically based, by direct suggestion posthypnotically, whether by the attempted production of a "psychological lobotomy" or of actual anæsthesia. Posthypnotic suggestion can, however, inhibit pain that is primarily emotionally determined.

In the hypnotherapeutic control of severe pain, it seems of prime importance to determine whether we are dealing with pain, the sensation, anatomically determined, or with pain, the emotion, psychogenically based. In most cases we are dealing with both. The crippling back pain of one patient made it impossible for her to engage in intercourse with her epileptic husband, while the just as severely incapacitating lumbar pain of a second kept her from recognizing her own death wishes against both mother and mother-in-law. Both patients were rendered pain-free by radical emergency psychotherapeutic procedures under hypnosis. To illustrate:

Patient No. 3 was a tense 32-year-old housewife with low back pain of 5½ years' duration, who had had a spinal fusion 2 years after the pain began, and who since then had frequently been in a cast, had just as frequently been hospitalized, and had for the most part been able to get around only in a wheel chair, except on occasions when she was carried up or downstairs by her husband. Since we knew nothing about the factors involved, she was hypnotized "awake" [5] and without her knowledge. A variation of the fantasy-evoking technique so frequently employed by Wolberg(9) was then utilized. She was told that she was sitting in a theatre and that on the face of the master of ceremonies she would see an expression of intense anticipation mixed with incredulity, as though, when he had looked behind the curtain, he had seen enacted before his eyes or experienced somehow within himself whatever it was he had so intensely desired all his life, but which he had been convinced he could now never experience. This suggestion was made because the patient had previously stated that nothing was left in life for her except intense pain, inability to care for her child and complete boredom; she now knew that because of her illness she could never have what she had so intensely desired and anticipated. She immediately saw enacted on the stage a scene in which she and her husband were present with two small children. She burst into tears. She had always wanted a second child, but thought that as a result of her pain she could never again carry one. The two adult actors next went swimming. This was seen on the stage. They then lay down together under a tree. She began to breathe deeply, cried "Stop! Stop! The neighbors will see!" and in the first person walked with her husband to the house, where they had intercourse. This was not related, but acted out. One function which the pain had served was that of making intercourse impossible. After the session, which she was allowed to remember in detail, was over, she walked out of the office by herself. This was in 1947. She has been able to walk since. Because at the time it was thought that she was about to return to the exceedingly frustrating environment in which her symptoms had been precipitated, no attempt was made to suggest away the slight residual pain which she still experienced at the base of her spine. This crutch, it was felt, was needed. She later obtained work as a swimming instructress, came back for further and more fundamental treatment, and was seen in all some 83 times. The problems of guilt and hostility that were involved will be described in another paper. (*Note:* I have now written this particular paper without going into these problems in detail. They will constitute the subject matter of another paper, with a different title, which I am now writing.)

[5] Since, because of the limitations of space, the induction technique is not described, this statement could be considered as a superficial characterization of one of the phenomena of deep hypnosis. Lid-closure was not at any time suggested, nor was the word "sleep" used. This technique will be described in detail in a paper now in preparation.

Severe hostility may be abreacted, and the pain disappear. As Hart states in an exceedingly thought-provoking article(10), anxiety is less tolerable than physical pain. In conversion hysteria, for example, the latter is substituted for anxiety and guilt. Intense somatic pain, since it serves as unconscious punishment, is much the more endurable.

Patient No. 4, a man in his late sixties, developed severe phantom-limb pain after a leg amputation because of diabetic gangrene. The pain continued despite a neuronectomy. On the conscious level he spontaneously abreacted his hostility against various members of his immediate family. During the second session, a week later, his hostility again came to the fore. His fears of death, of repeated operative intervention, and of complete disablement were articulated. These were all discussed with him on the conscious level. At the end of the session, he was hypnotized and told that while under hypnosis it would be of value for him to review in a meaningful manner the material that we had discussed together. He did this in thoughtful silence over a 10-minute period. His pain disappeared. This technique is a modification of the one described by Erickson and Hill(11).

Patient No. 5 was a 34-year-old veteran with a possible intervertebral disc who had been hospitalized because of low back pain associated with numbness of the right leg. This had begun shortly after an automobile accident 3 weeks previously. Because it was believed that he was showing a conversion symptom that would yield to a transference cure with relatively infrequent superficial psychotherapy, he was referred for hypnosis. He was told, primarily because he was unable to walk, that he was meandering along a road. He stumbled—in the snow—across his father's body. After he had abreacted his horror, with appropriate and intense emotional release, to its conclusion, he was regressed to a still earlier period on the basis of the emotion of the moment. His father had just been hit on the head. As it developed, this patient was now working at a job he disliked and at which his father also worked. During the discussion on the conscious level that ended the session, this was considered in some detail. He was unable to tolerate his now clearly recognized death wishes against his father, and within 2 days spontaneously became amnestic for the session. He was seen 3 times in all. By this time he was able to walk without difficulty. There remained, however, a sensation of mild discomfort in his lower back. It was believed that he needed this harmless crutch that served his personality needs without incapacitating him, since the probability existed, if the residua of his symptoms were suggested away without giving him something positive in their stead, that an acute suicidal depression would supervene. It should be stressed, however, that this patient, as a result of very brief hypnotherapy, was improved to such an extent that he did not find it necessary to lead a hospitalized or invalided existence.

The removal of the pain with the abolition of the guilt-fantasy means that the need for punishment (pain) is no longer active. In our experience, if the guilt-fantasy remains and the pain or other presenting symptom be made to disappear merely by direct hypnotic suggestion, the same symptom in all probability will soon be reprecipitated or more disabling symptoms take its place. According to Wolberg, in his discussion of the limitations of symptom removal by direct hypnotic suggestion, a psychotic shattering of the ego can occur(9). Such symptoms make it possible for the patient to function, in view of his emotional handicap, at his most productive and effective level. We have now seen a number of patients whose presenting symptoms previously had been suggested away by other hypnotists, as a result of which they were more seriously ill emotionally by the time of their referral than before their so-called treatment under hypnosis. It should be stressed, however, that we see only the treatment failures of our colleagues, just as they see ours. As Whitehorn(12) once said, "The only psychiatrist who believes what a patient says about another psychiatrist is the next one who treats him!" Nevertheless, in a future article we hope to present detailed case histories of patients whose "successful" treatment by direct hypnotic suggestion constituted the precipitating factor in their later need for further and more intensive medical and psychiatric treatment either for the same symptom; for the peptic ulcer, for instance, which symptomatically took its place; for the clinically psychotic behavior into which it was converted; or for the suicidal depression that, as a result of its disappearance, was now no longer held in check. Depriving a patient of the support that he receives from such symptoms, without attempting to substitute something positive in their place or help him in some other way, can be a potentially dangerous procedure. For this reason, we find it impossible to agree with Strauss (13) in his advocacy, with Salter, of autohypnosis. To illustrate from our own treatment experience:

Patient No. 6, a 40-year-old newspaper rewrite man, had been admitted to the neurosurgical service with questionable neurologic signs, blurred vision, and painfully incapacitating temporo-parietal head-

aches that had begun one month previously, after he had fallen down a flight of stairs and been unconscious some 45 minutes. Neurosurgical studies were negative. On admission, he seemed cooperative and well oriented, but became euphoric, confused, and disoriented for time and place after pneumoencephalography was done. This showed questionable cortical atrophy (20-25%) and an organic psychosis was therefore considered. In addition, because of his asthma he had been taking large doses of demerol, and a drug reaction also seemed possible. During the psychiatric consultation he smiled and laughed in the amused fashion of a 3- or 4-year old. He managed just not to answer the questions asked. "What *town* is this?" was answered on the basis of "What *time* is it?" He was, for instance, at present in the *Jones* Hospital—and therefore in Atlanta, Georgia. He did not impress us as having an organic psychosis or a so-called drug delirium, and was therefore hypnotized, without his knowledge, for the purpose of differential diagnosis. His euphoria immediately changed to deep depression. He was intensely worried about his quarrels with his wife, the divorce and immediate remarriage of both his parents, and his financial problems. He was completely oriented. He had suffered 2 to 3 severe headaches a week for the past 10 or 15 years, and these became intensified to such a degree after his fall that during the preceding month he had taken between a half and a full "medium-sized" bottle of bromo-seltzer daily. But over and above all this, since 1929 he had been worried about potential blindness. This was because of his history of a detached retina, his poor vision, and his job on the paper, which required the constant use of his eyes.

Posthypnotic amnesia was not suggested. Neither was it suggested that he remember what was discussed. Despite his euphoria, it was thought that a hysterical element was present that was masking a fairly severe depression. The next evening, ward personnel came upon this patient as he was about to make a suicidal leap from a seventh story window. He was therefore immediately transferred to the psychiatric section of the hospital for further treatment.

We have no intention of implying that symptom removal by direct suggestion is valueless and should never be used. Suggestive therapy has application whether utilized in conjunction with hypnosis or not. Whatever our feelings about them, faith cures do take place. Janet(14), one of the great advocates of direct hypnotic suggestion, made follow-up studies of some 3,500 patients whom he had hypnotized over a 30-year period. In 7%, cures seemed permanent. As a result, he considered suggestion hypnosis of prime therapeutic importance. However, by simple mathematics—if at this point we disregard considerations and criteria of cure, reprecipitation, and follow up—this means that 93% of his patients, after their symptoms had been removed by direct hypnotic suggestion, later, when under stress and strain, had the same symptoms reprecipitated or else developed new and perhaps more incapacitating ones. For this reason we look askance at suggestion hypnosis alone and only rarely make use of it.

As Saul(15) remarks, organic symptoms, psychogenically based, may represent the direct expression of emotions or conflicts, or result only indirectly from them. Pain can result from reversible or irreversible organic processes initiated originally by emotional disturbances. Alexander has shown, for instance, that peptic ulcer in certain patients may be the incidental result of years of gastric dysfunction induced by a specific type of emotional tension. A patient with frequent painful sore throat received repeated chemotherapy, but the sore throat disappeared only after his ritualistic masturbation while soaking wet in an empty tub and in an unheated bathroom on cold winter evenings came to light. In the hypnotherapeutic control of severe pain, it frequently becomes of prime importance to determine whether we are dealing with the direct expression of an emotion or with one of its indirect results. This merits special emphasis in view of the fact that such pain, even though at times organically based, not infrequently in our experience either serves as the *raison d'etre* for repetitive surgical intervention, which justifies the patient's neurotic behavior to himself and his relatives and thereby makes definitive psychotherapy almost impossible, or is associated with an already established drug addiction and serves as the rationalisation whereby such patients find it possible to continue taking the barbiturates or other drugs to which they have become habituated. On this last issue alone we agree wholeheartedly with E. B. Strauss(13), although parenthetically we find ourselves unable to agree with his statement, repeated in various ways throughout the course of his article, to the effect that psychiatry has more to offer in the alleviation of physical suffering than in the treatment of psychogenic pain.

Patient No. 7 had been wounded in the spine during the past war. He had had frequent repeti-

tive operative intervention. Because of the presence of pain in an anæsthetic area, the neurosurgical consultant recommended that a psychiatric examination be attempted. The associative anamnesis method of Felix Deutsch was utilized. He spoke constantly about his severe pain and his need for heavy sedation, which he nevertheless feared because, despite his penile anæsthesia and feeling of sexual inadequacy, he was having intercourse twice a week and felt emotionally convinced, although he knew better, that the sedative would be present in his ejaculum and constitute a toxic factor for the developing embryo, as a result of which he was afraid his offspring would be crippled or deficient. On the other hand, it had now been 5 years since he was wounded and he believed he was entitled to whatever relief he could get from drugs. He felt frustrated, helpless, and hopeless. His almost conscious motivational drive, whatever its underlying dynamics, was that of making himself increasingly dependent upon various individuals in his immediate environment. It was for this reason that he had finally married some 9 months previously. He was exceedingly narcissistic. The danger of drug addiction was a real one, if he were not already a drug addict. He needed his pain to justify his dependence on, at the very least, barbiturates and demerol, and at the time of the consultation was trying to undergo a further series of operations in order to justify both his pain and the other aspects of his neurotic behavior.

Various experiments have been devised to determine whether or not hypnotic anæsthesia is "genuine." During the past 100 years, numerous authors have questioned whether it was actually anæsthesia that was induced, or amnesia. This question can now be answered definitively, since a number of our patients were hypnotized "awake," without their knowledge and without either the suggestion or the appearance of posthypnotic amnesia. So far as the "genuineness" of the anæsthesia is concerned, Dynes(16) found that although his subjects became anæsthetic to pin-prick by direct suggestion, the psychogalvanic reflex was scarcely influenced by the trance state. Levine(17), in a series of exceedingly careful experiments, obtained the opposite results as did Fisher(18), whose subject, although conditioned to a sound stimulus, nevertheless showed no reflex response during posthypnotic auditory anæsthesia. Since, as Erickson(1) points out, the decerebrate frog and cat make what seem to be pain response to stimuli, results obtained from these experiments, involving as they do physiological as well as psychological reactions, are inconclusive. Erickson(19, 20) was able to induce complete auditory and visual anæsthesia (deafness and blindness). Pattie, who suggested anæsthesia for only one hand when fingers were interlaced in such a way as to make impossible an accurate knowledge of which hand was being stimulated (the position of the Japanese illusion), found no significant statistical difference, so far as recognition of the hand stimulated was concerned, between hypnotized subjects and nonhypnotized controls, and therefore concluded that "the suggestion of anæsthesia produces an illusion that anæsthesia actually exists"(21), although, according to Erickson(1), maintenance of the hand position negates the test and the same results most probably would be obtained if local anæsthesia were used instead of hypnosis. This has nevertheless raised the question of whether the patient is playing a role by pretending not to feel the pain and thereby malingering. The lobotomized patient who feels and describes his pain in exactly the same terms he did before his lobotomy—but without being annoyed, hurt, disturbed or "pained" by it—would be termed malingering if he were not lobotomized. And the patient in whom a psychological lobotomy has been induced under hypnosis and who likewise describes his pain as previously, but who now no longer feels annoyed, disturbed, or "pained" by the previously painful stimulus—including that of the passage of a child down and out of the birth canal—would also be termed "malingering" if the phenomenon were not observed under hypnosis and therapeutically utilizable. Clinically, of course, and irrespective of the specific hypnotic technique utilized, it makes no difference whether such anæsthesia is "genuine" or not: pain can be controlled and operations and deliveries performed, and to all intents and purposes the patient feels nothing.

Summary and Conclusions

1. All experience has its origin in sensory data, but such data are elaborated and integrated through various levels of the central nervous system. According to Foerster(22), pain should be classified as feeling and emotion rather than as sensation and perception, but no biological or psychological phenomenon can be comprehended in terms of single

cause and effect, and almost invariably pain must be considered both an emotional and sensory experience. Its source may be a stimulus in the periphery, or it may be central and cortical and projected to the periphery, as in the case of phantom limb pain or physical pain substituted for anxiety and guilt by the patient with, for instance, conversion hysteria. Treatment can therefore be designed:

(a) to interrupt the passage of the sensory impulse: neuronectomy; cordotomy; sympathectomy; procaine nerve block; or even cervical, bulbar, and mesencephalic tractotomy, including bulbar trigeminal tractotomy;

(b) to diminish or abolish the perception of the sensory impulse, even despite the fact that the end-organs continue functioning: chemical narcosis, hypæsthesia, and anæsthesia hypnotically induced; or

(c) to attack the problem centrally in some other way: thalamotomy, bilateral frontal lobotomy, partial postcentral gyrectomy; psychological lobotomy by hypnosis, induction of deep sleep under hypnosis; psychotherapy of various types with both hypnotized and nonhypnotized patients.

2. Various techniques can be utilized for the hypnotic and hypnotherapeutic control of pain: (a) Deep "sleep" may be suggested (patient No. 2 with terminal carcinoma). (b) Direct suggestion can be given to the effect that the patient feels nothing. This is a relatively simple procedure, but can be dangerous for the patient if the pain result from deep-seated emotional needs. This symptom, like other conversion symptoms, may mask an underlying depression that can come to the fore, even in suicidal proportions, if the pain be suggested away without giving the patient something positive in its stead (patient No. 6). On the other hand, suggestion hypnosis has been used in dentistry, surgery, and obstetrics as an analgesic, sedative, narcotic, and anæsthetic—and the resultant anæsthesia is as profound as that produced by chemical anæsthetics. The advantages here are obvious. (c) Hostility may be abreacted—and the pain disappear (patients Nos. 4 and 5.) (d) The psychological equivalent of a lobotomy may be suggested. The patient is told that no stimulus, no matter how intense, can possibly disturb him. He then feels the same "pain" sensation, which nevertheless does not disturb, annoy, hurt, or "pain" him (patient No. 1, a primigravida who was delivered by this technique). This analogy with a lobotomy is, of course, superficial and holds only with respect to clinically observable reactions of patients toward painful stimuli. (e) The fantasies back of the pain may be acted out (patient No. 3 with the diagnosis of a ruptured disc for which she had already had operative intervention).

3. Illustrative patients may be seen in almost every section of the hospital. If the emotional component is pronounced, their pain for the most part is poorly controlled by the more usual medical and surgical procedures. Of those patients whose protocols were utilized specifically for the preparation of this article, 5 were neurosurgical, 3 were orthopedic, 2 were surgical, and 1 was urological; 2 were obstetrical and 5 were medical.

4. During the discussion of that part of the clinical material that was utilized for illustrative purposes: (a) the technique of the psychological lobotomy was described; (b) specific dangers of treatment under hypnosis were emphasized; and (c) stress was placed upon the fact that pain, like other psychogenically based symptoms, is frequently utilized as justification and rationalization for drug habituation or addiction, or for the operative intervention for which some patients have so great a need in order to justify the continuance of their neurotic patterns of behavior (patient No. 7).

5. Although we believe that symptom disappearance by direct hypnotic suggestion constitutes an exceedingly superficial form of therapy and is not infrequently contra-indicated, selected patients can be treated to advantage under hypnosis by most of the more usual psychotherapeutic techniques and by some made possible only because of the hypnotic relationship itself. The superstition, however, is rampant, that work with hypnosis requires less background, less training, and less knowledge on the part of the therapist. For this reason, we have stressed the dangers involved.

6. Psychotherapy of any type can of course be exceedingly dangerous to the patient if its practitioner be incompetent. As Raginsky (23) states in his discussion of mental suggestion as an aid in anæsthesia, "One should be as careful with the psychologic scalpel as with the surgeon's scalpel and no less trained in the use of the psychologic microscope than in that of the bacteriologist or pathologist."

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DISCUSSION

Dr. L. R. Wolberg (New York, N. Y.).—Pain is an experience that serves a protective function, bringing to awareness a state of physiological disturbance, and of actual or impending damages to tissues or organs. The stimulus of pain produces a widespread reaction, physical and psychological, leading to activities toward alleviating pain or removing its source. While the neurological mechanism that signals pain is remarkably uniform, and while the pain threshold similarly is not influenced markedly by emotion, the perception of pain varies greatly from one individual to another, and in the same individual at different times.

Variations in the perception of pain—its minimization, distortion, or exaggeration—occur because of associated attitudes and emotions. Under extreme stress, for instance, a person may be totally unaware of painful injuries. This was a common war experience, when soldiers with parts of their bodies blown off remained oblivious to the pain until hours after being removed from the battlefield. Under conditions of anxious expectation similarly the individual may overreact to pain.

Pathological emotional conditions that produce disturbances in pain perception may be divided for convenience under character disorders and hysterical disturbances. Character disorders include the dependency disorders and the obsessive-compulsive. The former occur in individuals who are emotionally immature, possibly because of experiences with a depriving or overprotecting parent. Because pain provokes reaction on the part of others, such a person will use it as a plea for love and support or as a means of revenging himself on others, as if to say, "See what you've done to me." In the obsessive-compulsive character disorders pain when experienced organically may be equated with disease and mutilation. This leads to panic, and produces more pain with a hypochondriacal preoccupation. In some persons there is a masochistic need for self-punishment to propitiate guilt feelings.

In the hysterical disturbances, pain, which may

or may not have an organic source, is utilized, first, as a means of expressing deep needs and, second, as a protection against anxiety inspired by fear of certain impulses. An example of the former is the symptom of gastric distress, which frequently represents in a hysterical individual a plea for love, or intestinal or colonic spasms, which are often an expression of internal aggression. Pain as a defense against certain impulses may be illustrated by a case of torticollis that I recently treated in which painful self-punishment occurred for scoptophilic impulses. Writer's cramp frequently represents punishment for masturbatory wishes; back and genital pain may signify protection against sexual relations. In several instances I have treated arm pain and spasm in women, which appeared to represent a protection against murderous attitudes toward their children.

Where pain serves a vicarious adaptational function it may come to possess values diametrically opposed to its biological protective purpose. Here the experience of pain instead of inspiring adaptive patterns will lead to disorganized and ineffectual responses. Indeed pain may become an aim in itself, and its perception without adequate stimulus may become mandatory to the gratification of neurotic needs. Yet pain produces discomfort and causes the person to seek help. The person then is in a dilemma of wanting to preserve the very symptom for which he desires relief.

How does hypnosis affect this picture? The trance state revives the subject's feelings about the omniscience of authority, and persons with immature personality may satisfy in the trance state in phantasy the dependency need and may thus comply with the suggestions of the hypnotist, even to the giving up of functional pain both in the trance and posthypnotically. Where the dependency need is sufficiently great, even organic pain may be yielded. In hysterical disorders, however, where pain binds great anxiety and serves a protective function, response to hypnotic commands will expose the person to too great anxiety, and he will either resist suggestions, follow commands incompletely, transfer pain to a different locus, or, if his dependency needs are so impelling as to force him to follow suggestions, the resulting liberated anxiety may provoke dangerous and even psychotic reactions.

The key then to the use of hypnosis in pain is to understand the dynamic function of pain for the individual. This will involve inquiry into his character patterns and into the meaning of his neurotic symptoms.

PROGNOSES AND PSYCHOLOGICAL SCORES IN ELECTROCONVULSIVE THERAPY, PSYCHOSURGERY, AND SPONTANEOUS REMISSION[1]

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INTRODUCTION

At present there are numerous types and modifications of types of mechanical therapy used in the treatment of the mentally ill. This poses a serious problem for the psychiatrist —which therapeutic technique should be recommended for each patient. Current methods of selection have serious limitations both because of the errors made owing to the poor definition of mental disease forms and because of the lack of definitive criteria for therapeutic success. This paper deals with the latter problem and, although it is not intended to obviate the utilization of sound clinical judgment in selecting patients for therapy, it is hoped that suggestions for the objective selection of patients for specific treatments may be made that will assist in making these decisions.

One important aspect of the problem of relating patient to therapy is the establishment of criteria of improvement. Until there are reliable and valid dimensions of improvement, it is going to be difficult to determine who has improved. The improvement estimate in this study, perhaps the best pragmatic criterion now available, was based on a composite voice vote. Different rating scales were used(1); each rater used his own frame of reference or vantage point, *i.e.*, psychiatrist—symptoms; occupational therapist—efficiency; physical corrective therapy —energy, output, etc.

In a previous study(2) of brief stimulus therapy, it has been suggested that certain test levels obtained prior to treatment could serve as aids in predicting therapeutic success. These test levels were quantitative scores that could be utilized without a profound analysis of what the treatment procedure accomplished, or without keen insight into the psychodynamic structure of the personality of the patient. This quantitative approach supports the viewpoint that analyses and study of the functional impairment of the ego in the psychoses offers a fruitful approach for evaluating physiological treatment.

Another question raised by some psychopathologists is whether the indices of improvement derived from the present drastic physical treatments are higher than the improvement levels that occur if mental patients remit spontaneously by hospitalization, without shock therapy(3). It has been suggested that special treatments only alter the rate of recovery rather than increase the incidence of recovery. By equating the treated and untreated cases on as many variables as possible, including the time interval for improvement evaluation, we may be able to throw some light on this significant issue.

The present experiment, then, will concern itself with the following questions: (a) Is the pretest performance of patients who are suitable candidates for electroconvulsive and psychosurgical therapy but who actually improve spontaneously different from the pretest performance of patients who improve after these forms of therapy? (b) What are the general pretest performance characteristics that may be observed among patients who have improved during the course of electroconvulsive therapy or psychosurgery or who have remitted spontaneously?[3]

PROCEDURE

For both the ECT control patients and the psychosurgery control patients, no special

[1] Abstract of paper presented to EPA on April 28, 1950, Worcester, Mass. Reviewed in the Veterans Administration and published with the approval of the Chief Medical Director. The statements and conclusions published by the author are a result of his own study and do not necessarily reflect the opinion or policy of the Veterans Administration.

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[3] The assumption of spontaneity may be a questionable one. These cases received individual attention and treatment from numerous sources; the essential difference is that they were not receiving ECT.

treatments were provided, and their improvement was evaluated at a time interval after testing equal to that intervening between testing and the posttreatment evaluation for the shock and surgery groups.

The evaluation of improvement or unimprovement was based on the combined judgement of psychiatrists, nurses, aides, and lay therapists, *i.e.*, occupational therapists, recreational therapy instructors, and the manual arts department personnel. This estimate was obtained at a meeting of the staff where a majority decision by a show of hands was the deciding factor.

All the subjects received the pretreatment battery described below.

Tests Administered and Relationships Checked [4]

Memory.—Memory paragraph from Babcock Levy Test of Mental Efficiency (immediate and delayed recall, difference between delay and immediate, total memory, memory efficiency index and percentage of distortion); Benton Visual Memory Test; auditory memory from H-M Brain Damage Test; Rapaport Word Association recall; Wechsler-Bellevue digit span.

Abstractive Capacity.—Abstraction test from Shipley-Hartford Retreat Scale; Capp's Categorization Test; Goldstein-Scheerer Object Sorting Test; Wechsler-Bellevue similarities.

Motor Tests.—Minnesota Rate of Manipulation; O'Connor Finger Dexterity; Wechsler-Bellevue digit symbol.

Wechsler-Bellevue vocabulary; Harrower-Erickson Multiple Choice Rorschach.

SUBJECTS

Electroconvulsive Therapy.—There were 41 patients who received a complete course of ECT, 20 (49%) of whom improved and 21 unimproved. In the shock control group of 26 patients who did not receive ECT, there were 9 (35%) cases who "spontaneously" improved. Improvement evaluation was made 2 to 4 weeks after the last treatment in the shocked group and a comparable time was used for the control cases.

[4] For further information about testing procedures see reference 4.

Lobotomy.—Twenty-two patients were lobotomized of whom 12 (55%) fell in the improved group and 10 in the unimproved group. In the lobotomy control group of 22 patients, 7 (32%) improved only slightly while the remaining 15 did not. The control group met lobotomy selection criteria. Both the lobotomized group and their controls had been given ECT and met the usual control criteria of age, education, chronicity, and psychiatric personality rating.

Table 1 shows the composition of the various groups in terms of age, education, and percent improved.

TABLE 1

DESCRIPTION OF EXPERIMENTAL AND CONTROL GROUPS

Group	*N*	Mean age	Mean education	Percent improved
Electroshock	41	30.8	10.97	49
Electroshock control.	26	33.2	10.3	35
Lobotomy	22	34.9	10.6	55
Lobotomy control...	22	30.3	9.3	32

RESULTS

The prognostic or predictive potential of a pretest level for selecting patients who may improve was determined by means of a biserial correlation between test score and the dichotomy, improved—unimproved, based on the clinical estimate as criterion for improvement.

Although our data do not completely meet all the demands of the biserial correlation, the use of the coefficient can be justified if one views the correlations as suggestions or as forming hypotheses that will be tested in future experimentation with a larger number of subjects. The chi-square technique was used to examine the limited amount of Rorschach data.

Electroconvulsive Therapy Group.—Examination of Table 2, which presents the correlations (and their *P* values) between the tests and ratings of improvement for the patients who underwent shock, shows that improvement following shock treatment was significantly related with high pretest levels of abstraction (categorization), motor speed (Minnesota Rate of Manipulation), and with a positive difference between delayed and immediate memory (Babcock Paragraph).

There is a tendency (.20 level of confidence) for patients who do well on the digit span backward to improve also.

Chi-square analysis (Table 3) of the Rorschach multiple choice data indicates that there is a trend at the .20 confidence level for the improved cases to have low pretest frequencies of rejections and CF responses.

Electroconvulsive Control Group.—Study of Tables 2 and 3 indicates that improvement without shock treatment is positively related to a low level of rejections on the Rorschach ($P<.01$) and visual memory score ($P<.05$). Some relationship to improvement in this group is found with pretest motor level, positive differences between delayed and immediate memory, word association recall and an abstraction test, object sorting (all between the .05 and .20 confidence level).

Study of Table 4, which shows the mean values for the tests that significantly prog-

TABLE 2

BISERIAL CORRELATION OF TESTS AND RATINGS OF IMPROVEMENT

Test *	N	r	P
A. Electroshock Group			
Categorization	40	.50	<.01
Motor level	38	−.43	<.01
Diff.—immed. and delayed.	40	.36	<.05
Digit span reverse	39	.26	>.10<.20
B. Electroshock Control Group			
Visual memory	21	.51	<.05
Object sorting	23	.47	>.05<.10
Delay level	25	.38	>.05<.10
Motor level	23	−.34	>.10<.20
Word association	25	−.29	>.05<.10
C. Lobotomy Group			
Delay level	22	.76	<.01
Total memory	22	.69	<.01
Diff.—immed. and delayed.	22	.66	<.01
Shipley Hartford	22	.59	<.01
Digit span reverse	22	.57	<.01
Digit symbol	22	.57	<.01
Object sorting	21	.57	<.01
Series completion	22	.55	<.02
Auditory memory	22	.55	<.02
Distortion level	22	.47	<.05
Similarities	22	.45	>.05<.10
D. Lobotomy Control Group			
Digit span reverse	22	.38	>.10<.20
Auditory memory	22	−.35	>.10<.20

* Tests arranged in descending order of significance for each subgroup.

TABLE 4

MEAN SCORES OF SIGNIFICANT PROGNOSTIC TESTS

Test		Electroshock	Electroshock control
Categorization	I *	23.1	18.9
	U	19.5	18.7
Object sorting	I	18.4 †	20.1
	U	16.3	13.5
Motor level	I	76.0	79.6
	U	83.0	86.7
Digit span reversed	I	4.40	4.14
	U	3.74	3.29
Delayed memory	I	9.3	9.3
	U	8.0	5.5
Delay-immediate memory	I	+ .3	− .63
	U	−1.6	−1.90
Visual memory	I	4.4	5.8
	U	4.8	4.1
Word association	I	.78	.70
	U	.78	.58
Rejections on Rorschach	I	8.0	0
	U	1.48	1.88

* I = improved; U = unimproved.
† See reference 4.

TABLE 3

CHI-SQUARE TEST OF SIGNIFICANCE OF CERTAIN RORSCHACH SIGNS *

		ECT	ECT controls	Lobotomy	Lobotomy controls
Rejections	χ^2	1.271 †	81.6 †	1.65 †	.2231 †
	$\frac{1}{2}P$	>.10<.20	<.001	>.10<.20	>.30<.40
CF	χ^2	.6996	.6392	.1330	.....†
	$\frac{1}{2}P$	>.10<.20	>.20<.30	>.30<.40	
Color naming	χ^2	.3831	.0408		
	$\frac{1}{2}P$	>.20<.30	>.40<.50	.....‡	.....‡
Poor form	χ^2	.0708	.5317	.1330	.0045
	$\frac{1}{2}P$	>.40<.50	>.20<.30	>.30<.40	>.40<.50
M	χ^2	.0716	.1243	24.04	.3928
	$\frac{1}{2}P$	>.30<.40	>.30<.40	<.001	>.20<.30
FM	χ^2	.0107	.3310		
	$\frac{1}{2}P$	>.40<.50	>.20<.30	.....‡	.....‡

* Double dichotomy consisted of ratings of improvement or nonimprovement versus number of patients having presence or absence of sign.
† Number of rejections used, rather than number of patients rejecting.
‡ Not significant by inspection.

nosticated improvement in the 2 electroconvulsive groups, leads us to the common psychological elements that are related to improvement. Analysis of the means of unimproved and improved groups indicates that all the test levels of the improved cases, with the exception of visual memory, are equal (in only one instance) or above the test performance of the unimproved shock or nonshock patient. It suggests that patients who function at low levels on these tests cannot be helped by shock and will not improve through spontaneous remission. Study of the improved nonshock patient shows that in only 2 instances (word association and categorization) are the scores below unimproved patients in either the shock group or their controls. This suggests that certain patients improve whether or not they are given shock therapy. It would appear that more careful study should be made of the patients given ECT since many of them appear to improve spontaneously.

Brief analyses of the tests that appear to contraindicate the hypothesis that high functional efficiency is a requisite for improvement suggest the following speculative explanations. In the case of visual memory, in which scores of improved shock patients are below those of unimproved shock patients, we may be dealing with a memory test that reflects attention or concentration that is facilitated by ECT; clinical improvement is based on changes related to shift in this and other scores.[5] The categorization level of the improved non-shock cases is rather high even though it is slightly below the level of the unimproved shock cases. In fact, all our patients do quite well on this test, but only when patients function at almost perfect performance (23.1 out of possible 25) can it act as a prognostic discriminator. The word association score of the improved unshocked is lower than unimproved shocked cases. It may be that only the patient who does not perseverate, or who is not so bound by pathological data that he does not permit himself to make improved responses on the word association recall, is the one that can improve. Perhaps we may find that up to a certain level it is pathological not to be able to recall, but beyond a certain level it may be healthy.

Lobotomy Group.—The highest number of significant relationships were obtained from test records of patients who showed improvement after lobotomy (see Tables 2 and 3). Significant relationships at the .05 confidence level between pretest scores and improvement were found with well-retained memory (memory paragraph, word pairs, and word association) and good abstractive capacity (on the Shipley Hartford, object sorting, and similarities test of the Wechsler-Bellevue). There is a trend for patients who show the least number of rejections on the Rorschach to be the ones most likely to improve (.20 level of confidence). There is a marked trend for those who selected humans or M responses to profit from lobotomy ($P<.01$).

Lobotomy Control.—For the lobotomy control group (these patients like the lobotomy group had failed to profit from shock) we find that there are no significant specific prognostic indicators at the .10 confidence level. Only two tests, digit span backward and auditory memory, show a slight degree of relationship ($P>.10<.20$) with improvement.

Referring back to the first question mentioned above, the results indicate that the chronic patient who does not improve with ECT is not likely to show enough spontaneous improvement in the time interval studied here (approximately 3½ months between pretesting and clinical improvement evaluation) to make prognostic judgments tenable. For this reason, it is not possible to compare the improved case who received psychosurgery with the control population. It should be further noted that since the lobotomy controls had ECT and showed no improvement, we may be able to expect improvement at present only from psychosurgery.

Composite Performance of the Improved Patient

In order to answer our second question, we have ranked the tests in terms of a crude composite index based on P values. Study of Table 5 indicates the highest predictive

[5] This hypothesis is confirmed by examination of the posttreatment test scores, reported in reference 2.

TABLE 5

BISERIAL CORRELATION OF TESTS AND RATING OF IMPROVEMENT

Test *	Index	Electroshock			Electroshock control			Lobotomy			Lobotomy control		
		N	r	P	N	r	P	N	r	P	N	r	P
Diff.—immed. and delayed	.42	40	.36	<.05	25	.24	>.30	22	.66	<.01	22	.31	>.20<.30
Digit span reverse	.33	39	.26	>.10<.20	25	.25	>.30	22	.57	<.01	22	.38	>.10<.20
Object sorting	.33	39	.15	>.50	23	.47	>.05<.10	21	.57	<.01	22	.16	>.50
Delay level	.33	40	.13	>.50	25	.38	>.05<.10	22	.76	<.01	22	.18	>.50
Motor level	.29	38	—.43	<.01	23	—.34	>.10<.20	21	—.04	>.80	21	—.26	>.30
Categorization	.25	40	.50	<.01	26	.02	>.90	22	.17	>.50	22	.30	>.20<.30
Shipley Hartford	.25	40	.20	>.20<.30	26	—.04	>.80	22	.59	<.01	22	—.33	>.20<.30
Digit symbol	.25	41	.11	>.50	26	.24	>.30	22	.57	<.01	22	.10	>.70
Total memory	.25	40	.04	>.80	25	.24	>.30	22	.69	<.01	22	.04	>.80
Auditory memory	.21	34	.17	>.40	24	.16	>.50	22	.55	<.02	22	—.35	>.10<.20
Series completion	.17	41	†	>.50	24	.01	>.90	22	.55	<.02	22	.06	>.80
Visual memory	.17	41	†	>.50	24	.51	<.05	22	.08	>.70	22	—.04	>.80
Distortion level	.17	39	.07	>.70	24	.14	>.50	22	.47	<.05	19	.00	>.90
Similarities	.08	41	†	>.50	26	.22	>.30	22	.45	>.05<.10	22	.21	>.40
Word association	.08	41	†	>.50	25	—.29	>.05<.10	22	—.08	>.50	22	—.20	>.50

* Arranged in order of composite predictive ability based on arbitrary index of total points/maximum points ($P<.01 = 3$; $P<.05 = 2$; $P>.05<.10 = 1$; $P>.10<.20 = <.5$; maximum = 12).

† Not significant by inspection.

value (.42) is for the memory paragraph test, the aspect that measures positive difference between the immediate and delay recall. The delay level ranks second (.33) among all the predictive test measures studied. The positive memory difference demands first that the patient can profit from a rereading of the paragraph or that learning capacity for memories demanding consideration of interpersonal relations is not impaired. Second, the patient must be willing to improve or be critical of his mental output; motivation and level of aspiration determinants should be operative. Third, the patient must not become so involved in his inner life, in the 10-minute interim between rereading and recall, that he cannot reproduce the memories given without adding his conflicts or regressive interests and elements to the delayed recall.

The next highest predictive test, digit span backward (.33), also requires memory intactness as well as an ability to shift from forward and backward, or low level of rigidity and a high level of concentration.

The next highest prognosticator is the object sorting test (.33). This demands that the patients possess a fairly intact categorical attitude with common everyday things, *i.e.*, tools, eating instruments, smoking items, etc. Thus a patient must be discriminating and not permit concepts to merge because the ego is too fluid and allows instinctual immature desires to sway relationship judgments. In addition, he must be willing to cooperate and concentrate in another simple test requiring motor facility (.29).

Examination of the Rorschach data (Table 3) indicates that 2 responses are significant prognosticators, low rejections and a high number of M responses. Implications of the rejection response are that the unimproved patient is withdrawn from the immediate environmental situation, that he is either concrete-minded or that he is extremely negativistic. Finally, the presence of good M on the improved group suggests that those patients are willing to make contact with their human environment at least in the test situation and that they are capable of projecting imagination and action to the ink blots and possibly into these daily contacts.

SUMMARY

1. The rate of improvement between ECT and ECT controls is not significantly different. There is a similarity between the psychological pretesting structure of both the improved ECT populations (those who were shocked and improved and those who improved spontaneously).

2. Patients undergoing lobotomy show the highest correlations between pretest scores and ratings of clinical improvement. Tests of memory and abstraction are especially important in this group.

3. Certain tests of memory, abstraction, and motor function were found to yield significant biserial coefficients of correlation for all clinical groups except lobotomy control patients. Of the Rorschach signs studied, only the number of rejections was found to yield consistently significant chi-squares for all clinical groups.

4. Study of the rationale of the most predictive tests indicates that common elements exist between them that should be further explored.

5. The findings of this paper suggest that the psychological test structure of patients be carefully scrutinized either before they are made to undergo treatment or before they are considered poor candidates for treatment procedures.

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STERILIZATION IN PREVENTIVE PSYCHIATRY [1]

CLARENCE J. GAMBLE, M. D., MILTON, MASS.

To diminish the incidence of psychosis, state legislatures, following the example of Indiana in 1907, have passed laws for sterilization of the insane at governmental expense until these are now in effect in 27 states. That heredity influences the appearance of psychosis is beyond question. In consequence, by preventing parenthood of psychotics some reduction of the incidence of mental disease is possible. The proportion that can thus be eliminated from the next generation is indicated by studies of the parents of such patients. Schulz(1) found that about 4.6% of those with schizophrenia had a schizophrenic parent. Kallmann(2), also studying German cases, determined this percentage to be 5.4. Among manic-depressive patients Schulz(3) found that about 13% had a manic-depressive parent.

From these reviews it would seem that even if all the parents with dementia præcox or manic-depressive psychosis could have been sterilized before childbearing, only 5 to 13% of such cases in this generation could have been avoided. This expectation of prevention is still further reduced when it is remembered that some of the children are born before the parental disease becomes obvious.

While these findings indicate that several tubectomies may be needed to prevent one case of hereditary psychosis, this protection from parenthood has value from many viewpoints. For the patient it prevents the psychic overload that parenthood often involves, and lessens the economic strain on families in which the psychosis usually exhausts financial resources. As no sexual change is involved, this is accomplished without sacrifice on the part of the patient or spouse. For the community the operation is fully justified because the cost of institutionalizing one inherited psychosis will greatly exceed that of many operations.

It is from the point of view of the potential children, however, that sterilization has its greatest value. No upbringing by a psychotic parent can be satisfactory, and transfer to foster parents to avoid intolerable home surroundings involves sacrifice. Even if hereditarily normal, many children under the control of a paranoid parent will develop paranoid personalities. Furthermore, statistics on the inheritance of psychoses do not tell the full story, for there are many cases of inherited psychoneurotic traits that are damaging even though insufficient to be termed psychotic.

STERILIZATIONS UNDER STATE LAWS

Statistics collected by the Human Betterment Foundation of California and more recently by Birthright, Inc.(4) give the numbers of sterilizations reported by the 27 states as carried out under their laws. From 1936 onward the numbers done because of insanity, mental deficiency, and other causes are given. The annual number for which insanity was the basis increased to a maximum of 1,247 in 1940. Following this there was a decrease to 347 in 1947, with a recovery to 477 in 1949. At the end of 1949 the total number officially reported had reached 22,500. California had been the most active state with 11,445, followed by Virginia with 3,045, and Kansas with 2,055.

For comparisons between the states the Census Bureau's estimates of population in 1949 have been used to calculate the total sterilizations per 100,000 since the passage of the laws. The results are shown in Fig. 1. California has been the most active state with 107 per 100,000 followed by Kansas with 106 and Virginia with 98. For the 27 states the average was 37.

In 1949 the largest number of insane protected from parenthood were reported by Georgia with 140, followed by California with 126, and Iowa with 80. The relative positions of the states for the year are shown in Fig. 2. Georgia occupied the highest position with 4.4 per 100,000 followed by Iowa with 3.0 and North Carolina with 1.6. For the 27 states the average was 0.8.

To smooth out the variations from year to

[1] Read at the 106th annual meeting of The American Psychiatric Association, Detroit, Mich., May 1-5, 1950.

year, the sterilization rates have been calculated over 5-year periods, each point in Fig. 3 representing the average of the year indicated and the 2 preceding and 2 succeeding years. The population figures used have been interpolated from the 1930 and 1940 censuses and the estimate for 1949. The annual rate, which was 2.1 per 100,000 in 1936-1940, has since decreased to 0.67 in the most recent 5 years, 1945-1949.

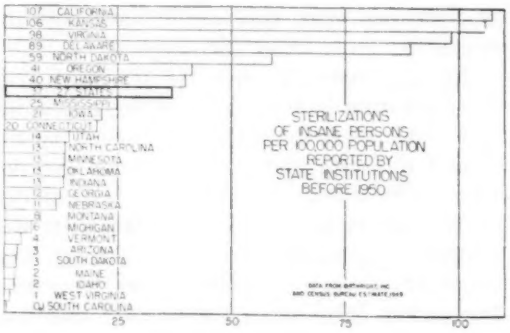

FIG. 1

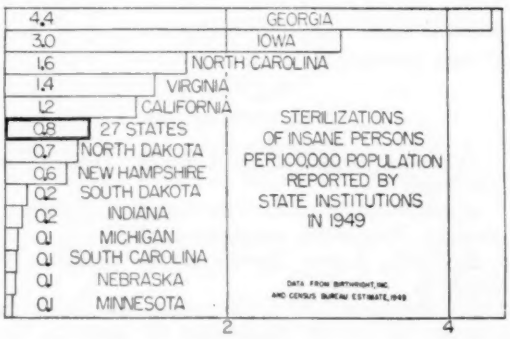

FIG. 2

The curves for the sterilizations of the mentally deficient have been similar in shape to those for the psychotics, though the decrease has been smaller. The annual rate of 2.4 per 100,000 in the first 5 years has diminished to 1.6 in the last 5.

The rising preponderance of feeblemindedness as a cause for eugenic sterilizations is shown by the ratios of the operations done for the 2 reasons. Before 1936, 56% of those performed for feeblemindedness or insanity had been for the latter cause. This proportion has since decreased from one-half in the year of 1936 to one-third in 1949.

The trends in the individual states are also shown in Fig. 3. It will be seen that the high rates in California, Kansas, and Virginia have decreased steadily. The protection rates in Georgia, Iowa, and North Carolina, on the other hand, have shown recent improvement.

In almost every instance the sterilization is done with the consent of the patient or his family. The reports indicate that such consent was obtained for 459 or more of the 477 sterilizations in 1949. This is in excess of 96% of these patients.

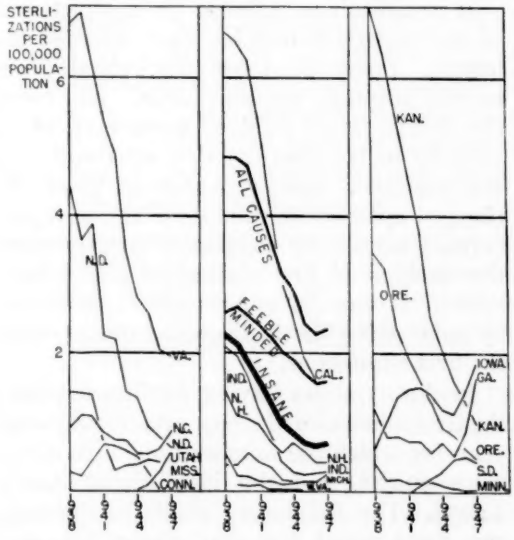

Fig. 3.—Sterilizations of psychotic patients reported by state institutions, per year per 100,000 population. The curves show 5-year moving averages for the individual states and for the 27 states having sterilization laws. Each point represents the average of the year indicated and the 2 preceding and 2 succeeding years.

STERILIZATIONS OF PSYCHOTICS IN OTHER COUNTRIES

The only country for which comparable quantitative reports of sterilizations are available is Sweden(5). In the years 1944 to 1948 the sterilizations for psychosis numbered 131 per year, or 1.9 per 100,000 population. This is about 3 times the recent rate in the 27 states.

In addition there were 239 sterilizations per year, or 3.5 per 100,000 for causes listed as "psychopathy, etc." Protection of the feebleminded has also greatly exceeded that in this country, the recent annual rate having been 14 per 100,000.

In Denmark, a report by Kemp(6) indicates that the annual sterilization rate for feeblemindedness is 6 per 100,000. For other causes the rate was 0.9 for the years 1935 to 1939 and 2.6 for 1940 to 1945. As epilepsy, blindness, hemophilia, and muscular dystrophy are included, the rate for psychosis is probably in the same range as that for the 27 states.

The Proportion of Psychotics Protected from Parenthood

It is difficult to estimate the completeness of the protection that has been afforded the insane. Some of those discharged from mental hospitals are not fertile. Of others the disease is so mild or temporary or so unlikely to be inherited that sterilization is not indicated. The proportion of those discharged upon whom tubectomy has been performed cannot be calculated directly since the number of first discharges is not published. It can be approximated, however, by subtracting the institutional deaths from the first admissions.

In the 27 states having sterilization laws the first admissions in 1946, the most recent year for which the number is published(7), were 29,428, and the institutional deaths 14,959. The difference, which in the long run must equal the first discharges, was 14,469. This is 32 times the 441 psychotic patients protected from parenthood in that year, and 30 times the 477 operated on in 1949.

It seems probable that a careful review of the cases and ample funds for surgery would lead to the finding that a much higher proportion of these psychotic persons could be protected from propagation with benefit to them, to the community, and to the potential children. This would undoubtedly be true if superintendents of state hospitals could know more of the lives and mentalities of the children of the discharged psychotics for whom they did not provide this protection.

Segregation as an Alternative for Sterilization

Segregation is sometimes proposed as an alternative form of protection from parenthood. That the expense is high is indicated by Butler's estimate(8) that it would have cost $21,831,300 to keep in the institution to the end of 1948 those who were sterilized and released while he was superintendent of the Sonoma State Home. A similar calculation can be made for the psychotics who have been reported sterilized in the 27 states. To retain these in institutions to the end of 1949 would have required at least 322,000 inmate years. Estimating the maintenance at $300 per year, this would have cost the taxpayers more than $96,000,000.

An important deterrent to sterilization is the confusion in the minds of the public between the operation and castration. That the sexual interests and characteristics are unchanged in the average case has been shown by several series(9-12). If psychiatrists will explain to patients and their families that sterilization causes no change that the patient can detect other than the desired one that children are not born, it will become possible to decrease the inheritance of mental disease, and to prevent many childhoods of mental suffering under the control of psychotic parents.

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COMMENT

WILLIAM L. RUSSELL

Dr. Russell was one of Canada's fine contributions to the United States. Most of his life had been spent in the latter country, but he frequently returned to the land of his birth and both shared in his affections. He had been a member and fellow of The American Psychiatric Association 53 years and his psychiatric career extended considerably longer. His devotion to the Association and to American psychiatry never slackened during his retirement years, and as he surveyed the long history of the Association his thought was always fixed upon the purpose for which it was founded—the welfare of the patients in the state and provincial hospitals. That purpose remained for him the paramount issue in 1951 as it had been in 1844. In his presidential address at the annual meeting in Philadelphia in 1932 Dr. Russell took account of the immensely widened scope of the organization during the present century and the multiplicity of its interests and objectives, but insistently he held attention to its primary obligation to assure for the mental patients of the country the best care and the best treatment that medicine and the state could provide. As he then expressed it, "Perhaps its greatest achievement as an organization is the service it has rendered to the establishment, organization, administration and advancement of the hospital treatment of mental disorders."

William Russell was one of the wise men of medicine of our time. His attitude toward changing conditions and tendencies within medicine and psychiatry was at once conservative and progressive. To the very end of his long life he scrutinized the procession of events and did not hesitate to criticize any move that he felt might prejudice in any way the advancement and effectiveness of organized psychiatry in the fulfillment of its purpose. His was a constructive and stabilizing influence in The American Psychiatric Association, and it was a matter of regret that his impaired physical strength did not permit him to take a more vigorous part in its activities and deliberations during these latter years. His splendid service as medical director of New York Hospital, Westchester Division and as professor of psychiatry, Cornell University Medical College, and withal the influence of his fine personality remain a wholesome heritage in the memory of his friends and colleagues.

"TOO SCIENTIFIC"

An able and well-trained psychiatrist said of a colleague the other day: "Oh yes, he's *too* scientific." We hold that this is a misuse of language; it is like saying someone is "too good"; it just doesn't make sense. What the speaker *says* is a cynical untruth and surprises the hearer, thus impressing him. What is *meant* is that the colleague's science was bad, which is perfectly possible, for scientific methods may be poorly chosen or uncritically applied. The data obtained may be misinterpreted or they may be inadequate for the solution of a given problem. What we object to is the statement that there can be too much of a good thing; that one can be "too scientific."

Twenty-three years ago Francis Peabody in his remarkable address on "The Care of the Patient" said:

> The practice of medicine in its broadest sense includes the whole relationship of the physician with his patient. It is an art, based to an increasing extent on the medical sciences, but comprising much that still remains outside the realm of any science. The art of medicine and the science of medicine are not antagonistic but supplementary to each other. There is no more contradiction between the science of medicine and the art of medicine than between the science of aeronautics and the art of flying. . . . . It is rather fashionable to say that the modern physician has become "too scientific." . . . . The popular conception of a scientist as a man who works in a laboratory and who uses instruments of precision is as inaccurate as it is superficial, for

a scientist is known, not by his technical processes, but by his intellectual processes; and the essence of the scientific method of thought is that it proceeds in an orderly manner toward the establishment of a truth. . . . . Disease in man is never exactly the same as disease in an experimental animal, for in man the disease at once affects and is affected by what we call the emotional life. Thus, the physician who attempts to take care of a patient while he neglects this factor is as unscientific as the investigator who neglects to control all the conditions that may affect his experiment.

Peabody was speaking of the situation in the practice of medicine; nowadays the schism among practitioners of psychiatry is even more obvious. On the one hand are those who decry "science" and even believe that psychotherapists must set up their own rules, different from those of other sciences. Opposed to them are those who would use only accepted methods and orthodox laboratory proceedings to investigate the working of the brain. Both are wrong. There must be new methods, continuously developed and tested, but the scientific method is a logical and necessary control for all.

The group who speak of "too much science" think about complex interpersonal relations, about social dilemmas with many ramifications. They do their best to help in these situations by using intuition and wisdom. Experienced psychiatrists accomplish a great deal in this way. "Intuition" is the short-cut used by the man of experience to avoid bringing to the conscious level many steps in his sequence of thought. It saves time in getting at the crux of a problem. "Wisdom" is an equally vague term, indicating that one uses his experience beneficently. These are both human traits of great importance. But they are not the sole possession of the practitioner and psychotherapist. The laboratory worker needs both of these and the great investigator has both in large measure. He needs intuition to choose a fruitful problem; he needs wisdom to evaluate his data and draw conclusions. Any fool can count and measure things and make charts. It takes the wise man to know what things are worth counting.

To say that one can be "too scientific" is nonsense.

S. C.

NEWS AND NOTES

DEATH OF SAMUEL RAMIREZ MORENO.—With deep regret we record the death of Dr. Samuel Ramirez Moreno in Mexico City April 12, 1951. Dr. Moreno had been a corresponding member of the American Psychiatric Association for a long time, frequently attended its annual meetings as a representative of his country, and was a loyal supporter of the organization. He was a member of the committee on international relationships.

Dr. Moreno had a distinguished career in psychiatry. He had been professor of neuropsychiatry in the faculty of medicine of the University of Mexico since 1926 and was also head of the department of forensic psychiatry in the law faculty. He had served as chairman of the neuropsychiatric division of the Federal Department of Health and Welfare. In addition he conducted his own private psychiatric hospital and edited the bimonthly publication, *Revista Mexicana de Psiquiatria, Neurologia y Neurocirugia.* He maintained membership in a number of psychiatric societies in South American countries, in Cuba, and in Texas.

Readers of the JOURNAL will recall his valuable illustrated article (September, 1942, page 194) on the Hospital de San Hipolito, founded in 1577 in Mexico City and the first institution for mental patients on the American continent.

Dr. Moreno was the only member of the Association from the Republic of Mexico and his death leaves a regrettable gap in our ranks.

MENTAL HEALTH IN INDIA.—Dr. S. A. Hasib writing in the Indian Journal of Neurology and Psychiatry (Vol. 2, No. 3, 1950) gives a depressing picture of psychiatric conditions in India and indicates the enormous task in educational work that confronts the recently organized Indian Psychiatric Society. To begin with, there are no statistics regarding the incidence of mental illness and mental deficiency, and in all India there are only a little over 10,000 beds for mental patients. This gives a ratio of one bed to about 40,000 of the population, compared to a ratio of about one to 300 in England. The government and the public alike are stated to be unaware of the magnitude of the problem. The few hospitals that exist are far below modern standards of efficiency, and the view of the public in general appears to be that they are intended only for hopeless cases. Dr. Hasib states that even medical men express surprise when told that mental cases are curable. He states also that prejudice and misunderstanding are so great that occasionally patients in a mental hospital have simulated aggravation of symptoms to prevent being returned to their home environment. Outside the walls of the hospitals "the field of psychiatry in India is a neglected waste. In many of the big cities there is not a single specially qualified physician to whom a mental case can be referred."

The problem of mental defectives has been totally neglected. "There are no schools or institutions for them. . . . They are left to themselves and are a veritable nuisance to their parents and a curse to society." They contribute largely to the ranks of criminals, sex perverts, prostitutes, and beggars. Apparently not even a beginning has been made to provide for the numerous class of mental defectives.

AWARD TO DR. HINCKS.—A Mental Health Award of $1,000 was recently granted to Dr. C. M. Hincks, general director of the Canadian Mental Health Association. This award was made by the Mental Hygiene Institute of Montreal and became possible through the generosity of an anonymous Montreal citizen.

In announcing the first Mental Health Award Dr. Jonathan C. Meakins, president of the Mental Hygiene Institute, stated that the award would be made every three years to the Canadian making the most significant contribution to mental health in Canada.

It was wholly appropriate and indeed in-

evitable that Dr. Hincks should be the first recipient of this award.

ZEITSCHRIFT FÜR PSYCHOTHERAPIE UND MEDIZINISCHE PSYCHOLOGIE.—This new bimonthly publication appeared in January 1951. It is edited by Professor E. Kretschmer (Tübingen) in association with F. Mauz (Hamburg) and G. Kühnel (Göttingen) together with 12 collaborators in different countries.

The March issue (the first received at the editorial office) contains an article by the editor, "Psychology and Psychotherapy of Paranoiacs," five other contributions, news items and abstracts, the issue numbering 44 pages. The *Zeitschrift* is issued by the Georg Thieme Verlag, Stuttgart, six numbers constituting a volume, cost D.M. 16.80 per annum.

TRIBUTE TO ADELE POSTON.—In the February 1951 issue of *Nursing World* appears a tribute to Miss Poston's 25 years of leadership in psychiatric nursing. Miss Poston was the founder, and is still the director, of the Psychiatric Nurses Bureau in New York City. The Bureau, which recently celebrated its 25th anniversary, was established for the purpose of rendering "assistance in any psychiatric situation" and has been of great service to the psychiatrists of the Greater New York area. At present there are approximately 200 registered and practical nurses on its roster, and the Bureau makes an effort to assign the particular nurse whose personality meets the needs of the patient. The Bureau also participates in recruiting of psychiatric nurses.

During World War I Miss Poston under the auspices of the National Committee for Mental Hygiene organized the first nursing unit for shell-shocked soldiers and served as its chief nurse. She was awarded the Distinguished Service Medal for her work overseas. She organized also the nursing school at the New York Hospital Westchester Division.

GRANTS BY CARNEGIE CORPORATION.—The Carnegie Corporation of New York announces two recent grants: $130,000 to the Social Science Research Council for continued support of the Council's program of area training fellowships and travel grants, which are designed to provide a period of field study for highly qualified specialists on foreign areas; and $10,000 to Northwestern University for further development of the new joint introductory course in anthropology, psychology, and sociology, entitled "An Introduction to the Sciences of Human Behavior." The course is under the joint direction of Kimball Young, Robert Seashore, and Melville Herskovits.

PI LAMBDA THETA AWARDS.—This National Association for Women in Education announces two awards of $400 each to be granted for significant research studies on the professional problems of women. The awards will be granted on August 15, 1951. Inquiries should be addressed to the chairman of the Committee on Studies and Awards, Miss Alice H. Hayden, University of Washington, Seattle, 5.

SYMPOSIUM ON FEMININE PSYCHOLOGY.—The Department of Psychiatry of the New York Medical College presented a symposium on "Feminine Psychology—Its Implications for Psychoanalytic Medicine" in March 1950 under the chairmanship of Dr. William V. Silverberg. Proceedings of the symposium have now been published by the Department of Psychiatry in the form of a 75-page brochure. Inquiries may be addressed to Dr. Stephen P. Jewett, Flower and Fifth Ave. Hospitals, New York City.

MENTAL HOSPITAL POPULATION, NEW YORK STATE.—In the year 1896 state care had become completely effective in New York State. There were then 12 state hospitals housing 19,500 patients.

A quarter of a century later there were 14 state hospitals providing for 41,000 patients.

Now at the half century mark there are 20 state hospitals and 7 state schools, registering altogether 117,944 patients of whom 103,021 patients are in residence.

From Mental Hygiene News March 1951,

published by the New York State Department of Mental Hygiene, we learn that to meet the urgent need for increased accommodation a building fund of 125 million dollars has been appropriated for new construction during the fiscal year 1951-1952. This new construction will affect 13 of the state's mental hospitals and will provide for the addition of 9,500 beds to the total capacity.

ANTIBIOTICS AND CHEMOTHERAPY.—This new monthly publication appears as Volume 1, Number 1, in April 1951. Its editorial board under the direction of Henry Welch, Ph. D., director of the Division of Antibiotics, Food and Drug Administration, Washington, as editor-in-chief and Felix Marti Ibanez, M. D., international editor, comprises five Nobel Prize winners and over 60 world-famous authorities on antibiotics and chemotherapeutics. For the expanding field of psychiatric research this publication should prove of great value.

It is published by the Washington Institute of Medicine and costs $10 per year. Editorial office is 1708 Massachusetts Ave., N.W., Washington 6, D. C.; publication office 667 Madison Ave., New York 21.

AMERICAN NEUROLOGICAL ASSOCIATION.—The 76th annual meeting of the American Neurological Association will be held at the Hotel Claridge, Atlantic City, N. J., from June 19 to 20, 1951.

BROOKLYN PSYCHIATRIC SOCIETY.—The following officers have been elected for 1951-1952: Dr. Sam Parker, president; Dr. Joseph L. Abramson, vice-president; Dr. Morton H. Hand, secretary-treasurer; Drs. Kelliher Bondar, Sidney L. Green, John A. Bianchi, and David M. Engelhardt, executive committee.

INTERNATIONAL CONGRESS OF PHYSICAL MEDICINE.—This Congress will take place in London July 14 to 19, 1952. The meetings will be reserved for matters dealing with the clinical, remedial, prophylactic, and educational aspects of physical medicine and with the diagnostic and therapeutic methods employed in physical medicine and rehabilitation. Technical, scientific, and historical exhibitions will also be arranged.

The president of the Congress is Lord Horder, and the honorary secretary is Dr. A. C. Boyle, 45, Lincoln's Inn Fields, London, W.C.2. Correspondence should be addressed to Dr. Boyle in care of the International Congress of Physical Medicine (1952). Full details of the Congress will be available at a later date.

PSYCHODRAMA WORKSHOPS.—The Moreno and Psychodramatic Institutes will sponsor two workshops June 30 to July 4 and September 1 to 3. The theme of the conferences is "Training in Human Relations"; they will cover psychodrama, sociodrama, sociometry, and group psychotherapy. For further information write to the Moreno Institute, Beacon, N. Y.

BOOK REVIEWS

SOCIAL PSYCHOLOGY OF MODERN LIFE. Revised Edition. By *Stewart Henderson Britt.* (New York: Rinehart & Company, 1949.)

It has been a long time, in fact since the appearance of an early edition of William McDougall's *Introduction to Social Psychology,* since this reviewer has read a formal text on social psychology. However, it was not for this reason alone that the careful perusal of Mr. Britt's book was an enlightening experience. In itself, it is a stimulating piece of work, prodigiously rich in factual content, detailed but easy of comprehension, exhaustive but not exhausting to read.

The base of this book is a broad one, material having been drawn from the fields of experimental and clinical psychology, anthropology, biology, and psychoanalysis. If the author has had little that is new to add, he has performed the exceedingly useful and necessary function of distilling and synthesizing relevant information and applying it to a survey of social institutions, thereby increasing our knowledge and understanding of them greatly. By avoiding the pitfall of too theoretical an approach, he has examined our culture and put it in human terms, terms of everyday living and present-day problems. He has then assembled the results of work done in ancillary fields to throw further light upon the forces at work that have produced the particular culture with its attendant conflicts and how that culture in turn affects the individual.

Throughout the book emphasis is placed on the interrelationships of human beings and on the interrelatedness of physiological, psychological, and sociological factors. For example, on the basis that sex is not the sole determinant of human behavior, he recapitulates the work of Kinsey, Mead, Maslow, etc., and from it draws conclusions concerning its influence upon the individual, the ramifications in social living of the sexual drives, and the part that culture plays in dictating what expression these drives will have.

Psychiatry, because of its primary clinical interest, has for many years been insisting that both sociology and psychology must become more empirical and less academic in order to be of greater aid to the problems of psychopathology. *Social Psychology of Modern Life* completely fulfills this requirement, and thus should be of great interest and considerable value as a background to the practice of psychiatry.

An excellent bibliography, lists of references, and a complete index enhance the usefulness of this book.

BERNARD GLUECK, M. D.,
New York, N. Y.

EXPERIMENTS IN SOCIAL PROCESS: A Symposium on Social Psychology. Edited by *James Grier Miller.* (New York: McGraw-Hill Book Company, 1950. Price: $3.00.)

This volume presents the results of a symposium of social psychologists held at the University of Chicago in November 1947. In his introduction, Dr. Miller points out the rapid development of the field of social psychology and the vast amount of literature that is being accumulated. Nevertheless, there is still need for further study of methodology, and it is this aspect that is emphasized by the contributors. Donald Marquis, Ronald Lippitt, Leon Festinger, Dorwin Cartwright, Daniel Katz, and John R. P. French, Jr., of the University of Michigan, are among the participants dealing largely with methods. Donald McGranahan and Ivor Wayne of Harvard present an interesting comparative study of national characteristics (American versus German), and James J. Gibson of Cornell discusses the implications of learning theory for social psychology.

The members, together with Professor Szilard and Dr. Miller, conclude with a round-table discussion of "Social Psychology and the Atomic Bomb."

The volume is an instructive contribution to the literature of a growing and important field.

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TENSIONS AFFECTING INTERNATIONAL UNDERSTANDING: A Survey of Research. By *Otto Klineberg.* (New York: Social Science Research Council, 1950.)

This important publication of the Social Science Research Council was prompted by the "Tensions" project of UNESCO, of which project the author later became the director. It is a digest of the literature that bears on various aspects of international tensions, presented systematically, with critical comments and suggestions for further study by the author. Dr. Klineberg frankly admits he has not attempted to cover all aspects of the subject, nor all the literature pertaining to those features he considers of special importance. As it stands, however, it is a very valuable compendium of the results of many researches that have been published in recent years. It deals with the various techniques for assessing ethnic differences, such as public opinion polls, statistical studies, intensive interviews, psychologic testing, etc.

This leads into a study of national "stereotypes," the conceptions (or misconceptions) people of one country commonly believe to be true of the people of another country, how such stereotypes arise by their depiction in history books, movies, tradition, etc. From the study of stereotypes the author goes on to a study of attitudes, *i.e.,* with such information or misinformation as one nation may have about

another, how a person (or a nation) reacts to persons of another nationality. This section of the book emphasizes the ways by which people's attitudes can be influenced or changed, by such agencies as the home, the school, the movies, the press, more exact information, reasonable propaganda from authentic sources, etc. The chapter headed "Influences Making for Aggression" is perhaps the least satisfactory from the reviewer's standpoint, because of its brevity and its failure to emphasize a number of very important factors, which realistically may help to produce world wars. Instinctual aggression, animal psychology, problems of leadership and followership (especially the leadership of magnetic psychopaths), the influence of fear in producing national delusions and national violence, the lessons of history (France under Napoleon or the Peloponnesian War), the effects of geography, population, and economics—these and many more fields of study call for a companion volume in order to get a more complete approach to the problem of why men all around the globe, whose similarities are so much greater than their differences, refuse to live together like men, but prefer to die together by mutual extermination. This book is excellent so far as it goes, but a companion volume is urgently needed that would incorporate these additional fields of study.

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SEX AND THE STATUTORY LAW. By *Robert Veit Sherwin, LL. B.* (New York: Oceana Publications, 1949. Price: $2.50.)

The author, a member of the New York Bar, has given as subtitle to his book: "A comparative study and survey of the legal and legislative treatment of sex offenders." In the book he attempted to "place before the interested Reader a composite picture of the statutory treatment of Sex as it appears in the United States today." Many of these statutes have not been revised since the 1870's.

Each state has its own method of indexing sex crimes; some terms, such as "disorderly conduct," are really "catch-all" statutes referring to many types of sexual as well as other misconduct. An overt act in one state may not be considered a serious offense; whereas, in another state it is punishable by fines and imprisonment. For example, public profanity, with either a sacrilegious or obscene element, is punishable by a fine of $1,000.00 and/or 12 months' imprisonment in one state; whereas, in some other states the punishment is a one-dollar fine only; and in at least 7 states it is not considered as an offense. The term "vagrancy," like "disorderly conduct," refers to sexual as well as nonsexual actions, such as prostitution or having a "methodless" way of living. The penalty for "vagrancy," in some states, merely requires the convicted person to post a bond for a year in order to better secure his good behavior, while in some states one can be sent to prison for a period up to 3 years.

Fornication, an act of intercourse by an unmarried person, is not a crime in 10 states; but in one state, the punishment for this act is 3 years' imprisonment, while the punishment is $1,000 fine and/or 12 months' imprisonment in another state. In one state, if any sleeping car passenger remains in a compartment other than the one he is assigned to, he is subject to a fine of $1,000.00 and/or 12 months in jail.

About 20 states have statutes concerning the subject of contraceptives, usually dealing with either advertisement or sale. However, in one state, the *use* of any contraceptive is punishable by a fine and imprisonment up to one year.

If a married couple practice cunnilingus or fellatio, even if only as a prelude to normal intercourse, it is just as illegal as for unmarried persons; and the penalty in 2 states is life imprisonment, while other states have maximum prison sentences of 2 to 60 years. For conviction of this crime, in a married couple, there must be a third person as a witness, because in many states a husband and wife need not testify against each other.

In the last chapter of the book, the author discusses the sexual psychopath laws passed in some 9 states. He points out the harmful effects as well as the benefits from such laws. He stresses the need of psychiatric observation and treatment of some types of sex offenders. He states that sexual education is not encouraged in most schools. Finally he points out the fallacy of having obsolete laws that are not enforced and that give the public a disrespect for laws that they know or at least feel they have reason to know are not often enforced.

He writes, "And finally, as part of the same reason, it gives the intentional wrong-doer a perfect and unobstructed haven in which to accomplish his illicit activity. This is especially so in some types of activities where the laws prohibiting them are antiquated, ambiguous, impossible to construe, and slow and cumbersome in function and application. The victims are not only the children and the weak whose morals are corrupted and whose aims are diminished and destroyed through the medium of obscenity and indecency. It is Society as a whole that becomes the real victim, as it is upon Society that the children as adults eventually come to rest either as plunderers or as inmates of tax-supported institutions."

This book is recommended for psychiatrists in general, and in particular for those who are, or will be, called upon to assist in the framing of laws dealing with so-called "sexual psychopaths." They should realize how many laws dealing with sexual offenders are archaic, and they should use their influence to have such laws repealed, rather than merely aiding in the framing of new laws. Some of these recent laws are, unfortunately, not enforceable, because of lack of adequate psychiatric facilities and personnel for the examination of persons charged with sexual crimes.

FRANK J. CURRAN, M. D.
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CHILDREN WITH MENTAL AND PHYSICAL HANDICAPS. By *J. E. Wallace Wallin.* (New York, Prentice-Hall, Inc., 1949. Price $5.00.)

This is a research-oriented, comprehensive textbook covering numerous investigations and bringing the material in the field up to date. The author points out that he has preferred the above title to titular emphasis on mental handicaps alone because of the inclusion of several types of physically damaged children, most of whom are not mentally defective.

The first part deals with definitions of mental defectiveness and backwardness; various concepts and theories of mental defectiveness; the relationship between mental deficiency and mental diseases; diagnosis and classification according to psychological characteristics, educability and socio-vocational competency, and etiology. The rest of the book covers special clinical types, such as endocrinopathic disorders, cretinism, mongolism, growth anomalies related to endocrine disturbances, growth anomalies related to biochemical or metabolic disturbances or nerve degenerations, epilepsy, encephalitis, cerebral palsy, poliomyelitis, microcephaly, hydrocephaly, syphilitic brain defects.

The clinical psychologist and psychiatrist might find this book somewhat limited in the attention given to pseudofeeblemindedness, which is only recently being more fully explored and dealt with in literature. One regrets that the author fails to credit the contributions made to the study of "hospitalism" and early infantile autism and gives little thought and recognition to the impact of emotional factors that may impede "mental" functioning.

The chief merit of this book is the collection and organization of factual data. It is therefore more useful as a work of orientation and references than as a guide to clinical application. It would have gained considerably by being less coldly intellectual and a little more stimulating and imaginative. A bit of personal warmth added to the well-organized erudition might have made a real human experience of the study of the book, rather than essentially an exercise in becoming acquainted with a welter of facts.

CHARLOTTE H. WASKOWITZ, M. A.,
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School of Medicine.

NEW DISCOVERIES IN MEDICINE: Their Effect on the Public Health. By *Paul R. Hawley, M. D.,* (New York: Columbia University Press, 1950. Price: $2.50.)

The second series of Bampton Lectures in America delivered in Columbia University in 1949 are reproduced in this small book. The material is a selection from the many lines along which medicine has advanced in the last quarter century. First to be considered is "Our Fabulous Blood." History is called upon to tell of the superstitions that grew up around the miracle fluid and science to tell of its specific action in overcoming infections of the body. The story of blood transfusion is admirably told and ends with an account of blood banks used in the late war and continued by the Red Cross Society in hospitals all over the world. A special chapter is given to the Rh factor, and an intelligent lay public, to whom the lecture was addressed, might be expected to grasp the significance of the condition and the importance of recognizing its implications. The lecture on the surgery of heart and lungs was augmented by slides and moving pictures prepared by Dr. Dwight E. Harken of Harvard. These are, of course, not reproduced but the text deals adequately with the amazing results now possible with modern techniques.

Mental hygiene and the treatment of mental diseases evoked considerable enthusiasm in the lecturer. A few years ago the only suggestion offered to offset the increase in mental disorders was a great increase in the number of hospital beds. New techniques, increased knowledge and, especially, the multiplication of mental hygiene clinics have quite altered the situation. The lecturer is not a psychiatrist but his bearing toward the Freudian school is quite evident.

The final lecture is on the economics of medical care and the case against socialized medicine is stated in no uncertain terms.

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PERSONALITY DEVELOPMENT AND ASSESSMENT. By *Charles M. Harsh and H. G. Schrickel.* (New York: The Ronald Press, 1950. Price: $5.00)

The first half of this book traces the development of personality in conventional fashion, from an account of heredity, through infancy and childhood, and on to old age. At each level there is discussion of the factors influencing personality, the problems of adjustment, and the major individual variations. This part of the treatise is elementary in content, though sometimes complex in style of presentation. It is geared for the college undergraduate. The second half of the book is more lively. It includes a particularly good review of the divergent theories of personality. This chapter could serve the physician as excellent source material for lectures he may be asked to give on personality adjustment. Otherwise there is little in the volume to interest physicians. The text is focused essentially on the needs of personnel counsellors, clinical psychologists, and college students.

Techniques of assembling personality are, apparently, major areas of interest for the authors. Several chapters deal with this and there is much interesting material on rating scales, questionnaires, and other methods of appraisal. There is some mention of methods of personality readjustment, but little attention is paid to the actual technique of therapy.

HENRY A. DAVIDSON, M. D.,
Flemington, N. J.

IN MEMORIAM

DOUGLAS ARMOUR THOM, M. D.
1887-1951

Dr. Douglas Armour Thom died in Boston, February 23, 1951, leaving a widow, Mrs. Emily Thom, and a son, Robert. Although his friends had observed gradual physical decline during the past few years, they were proud of the fortitude that enabled him to carry on to the last, with no obvious deterioration of his personality and with no letup in his determination to do all the good he could before he died. Indeed, the day before his death, although obviously seriously weakened by extensive malignant disease, he inspected the Veterans' Hospital at Bedford and planned to go to Togus, Maine, the next day.

Although he was born in Boston, October 4, 1887, his early years were spent in Camden, Maine, and throughout his life he turned to Camden as his real home; his boyhood friends there were always "the home folks." To the end of his life many of his intimate friendships had extended from early days.

He attended Dow Academy in Franconia, New Hampshire, and from there entered the University of Vermont Medical School, graduating in 1912. He received an honorary M. S. degree from his alma mater in 1935. Immediately upon graduating he became a member of the staff of the Monson State Hospital, then somewhat in the foreground in the field of epilepsy. He soon attracted the attention of Dr. Elmer E. Southard, then state pathologist, and joined that brilliant group of young men who, with Dr. Southard, were trying to introduce a scientific spirit into neuropsychiatry. He very early showed an originality both in locating fertile fields of inquiry and in devising modes of investigation. While at Monson, he published several papers, especially concerning the role of heredity. Almost all those who had studied the ancestry of epilepsy had assumed that it was inherited, but Dr. Thom's study of their descendants did not substantiate this.

He was soon called to a wider field and became assistant state pathologist under Dr. Southard. Always on the frontier, he was one of the earliest to introduce modern treatment for paresis.

When the first World War came he entered the national scene as a captain in the Medical Corps of the Army. With long service in France, where he was particularly successful in treating neuropsychiatric cases, he became acquainted with the leading figures in the neuropsychiatric world. He ultimately travelled from England to Italy, teaching techniques of psychotherapy in connection with what was then called "shell shock." Again his literary talent came to the foreground in a number of publications concerning military psychiatry. He soon won a place of leadership in this field, which he sustained during the rest of his life.

After the war he was associated for a while with the Red Cross in setting up neuropsychiatric clinics but in a short time entered into his greatest life work, the Habit Clinic for Child Guidance. He was one of the first to see the relationship between nervous and mental disease, as well as behavior disorders, and the faulty habits of children of preschool age. In 1923, in conjunction with Dr. Richard M. Smith, he began the systematic treatment of emotional disorders in preschool children. Immediately it was obvious that he had found his place in this great field, for the Habit Clinic soon became known throughout the civilized world. The name of Thom became synonymous with child guidance and habit training in children; his papers and books were translated into many languages; his advice was widely sought by individuals and organizations. While he had a rare gift in dealing with individuals, he had also organizing ability of the first order. He developed a large private practice with problem children and "problem parents," as he often said, but he had a national function as a coordinator of re-

search and a stimulator of organized effort.

For more than 25 years he was a member of the Massachusetts State Department of Mental Health, and he was an officer of the New England Society of Psychiatry, the Boston Society of Psychiatry and Neurology, the Massachusetts Psychiatric Society, and many others. For a considerable period he served as president of the Boston School of Occupational Therapy and of the Massachusetts Society for Mental Hygiene. He was an honorary member of the Royal Medico-Psychological Association of England and the Société Medico-Psychologique of France.

Dr. Thom had a distinguished career as a teacher. He was for many years professor of psychiatry at Tufts Medical School, at one time was instructor in psychiatry at the Harvard Medical School, and professor of psychiatry at the University of Vermont. He was one of the original faculty of the Smith College School for Social Work. At Tufts he originated the practice of sending every medical student for one month's service in a state hospital.

During the last war he was a Colonel and served as a consultant to the Surgeon General and to the Army Headquarters at New York. Although he was stricken with a known fatal disease and retired from the Army thereafter, he immediately entered into one of the most active periods of his life as consultant to the Army, the Veterans Bureau, and the Massachusetts Department of Mental Health. He had charge of the training of young men going into this field and travelled hither and yon, his advice always sought in great undertakings having to do with the problem of the neuropsychiatric veteran.

He met his illness with equanimity and imperturbability, according to the best tradition of William Osler. He exhibited to a marked degree that quality extolled by Kipling: "To walk with kings, nor lose the common touch." With all his greatness in medicine, he was, perhaps, greatest in his capacity for friendship. Those who loved him felt a closeness that transcended all official and professional feelings. While he gave the appearance of being carefree, he was a prodigious worker, who clung to each task with tenacity. Although dignified and reserved, he had a merry boyishness in his contacts with his intimate friends, which was delightful. All ranks and types of men used the name "Doug" with affection and respect.

Out of the night that covers me,
Black as the pit from pole to pole,
I thank whatever gods may be
For my unconquerable soul.

In the fell clutch of circumstance
I have not winced nor cried aloud.
Under the bludgeonings of chance
My head is bloody, but unbow'd.

Beyond this place of wrath and tears
Looms but the Horror of the shade,
And yet the menace of the years
Finds and shall find me unafraid.

It matters not how strait the gate,
How charged with punishments the scroll,
I am the master of my fate:
I am the captain of my soul.[1]

A. Warren Stearns, M. D.

[1] *Invictus,* by William Ernest Henley. The Oxford Book of English Verse, 1250-1918. Oxford: The Clarendon Press, 1931.

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